ADVERTISING PAGES REMOVED

TELEPHONE ENGINEER
MANAGEMENT • ENGINEERING • MAINTENANCE

VOL. 44, No. 10 OCTOBER 15, 1940

ACROSS THE Editor's Desk

We want to take this opportunity to invite each and every visitor to the U. S. Independent Telephone Association Convention to visit with us during the 4-day session. For your comfort there will be chairs aplenty in Room 2559-A and we hope, a continuous "Bull Session." Many of you will be attending your first National Convention and we hope you read both the Editorial and the Convention story in this issue. A visit in Room 2559-A will make you feel at home.

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Also at the Convention will be Atwell Jackson, telephone sales consultant for TELEPHONE ENGINEER. He will be glad to give you his free advice on sales matters that might have you stumped. Jay G. Mitchell will also be in attendance.

ATTEND THE CONVENTION

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Published Monthly by
Telephone Engineer Publishing Company
A Magazine devoted to the interests of the entire telephone industry—operating men and manufacturers.

SERVING THE FIVE BILLION DOLLAR TELEPHONE INDUSTRY

Founded in 1909

Office of Publication, Pontiac, Illinois. Executive and Editorial Offices 7720 Sheridan Road, Chicago, Illinois. Phone Rogers Park 3040. J. A. SMITH, President and Treasurer; RAY W. SMITH, Vice-President and Editor. Subscriptions: U. S., Cuba, Mexico, $1.50 Per Year; Canada, $2.00; In all Other Countries, $3.50. Single Copies, U.S.A., 15 cents. All Subscriptions should be sent DIRECT to 7720 Sheridan Rd.

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EDITORIAL

Why Hold Telephone Conventions?

EVERY now and then someone asks the question above. At the national convention last October we heard an answer to it which we think is worth the consideration of every Independent telephone man.

The answer was given by a gentleman who is the manager of a telephone company outside of North America. This gentleman attends the national telephone convention in the United States whenever he can. One evening, during the national convention last year, he was discussing telephone matters in general with a number of telephone friends. During the discussion he was asked by someone to outline what he considered the disadvantages, to the individual, of employment in the business in other lands.

"The thing I miss most," replied this gentleman, "is the opportunity to regularly attend telephone conventions like this one. The country in which I am located has comparatively few telephone companies and telephone people, so a telephone association, and telephone conventions, would not be practicable. Further, there is no manufacture of telephone apparatus in the country where I work, and consequently there is not, in that country, any development of the art such as takes place in the United States."

"The result of this situation is that unless I can get to the States and attend a telephone convention every now and then, I find myself falling badly behind in knowledge of recent and important developments of the art and of telephone business procedures. The only thing that keeps me reasonably conversant with changes in the art and business is a very careful reading of every issue of your splendid trade magazines. They are most helpful, but of course they cannot possibly print everything that happens."

"It is a mystery to me," said this gentleman, "why any Independent telephone man in the United States will stay away from his state telephone convention and the national telephone convention, if he can possibly get there. I must travel thousands of miles, at the expense of considerable time and money, to attend this convention, and I consider it worth all the cost. I will go home from here with many new and valuable ideas and with an up-to-date knowledge of many ramifications of the business, which I could not obtain any other way. All of that will be worth a great deal of money both to me and to my company."

NOW there is something for the Independent telephone men in the United States to think about when, during the next week or so, they may be making up their minds whether or not they are going to attend the forthcoming national convention in Chicago on October 15th, 16th, 17th and 18th.

—

It is very often the case that we fail to fully appreciate the value of a thing which is readily available to us. Benefits and advantages which can be had very easily are too often passed by without proper realization of their worth.

There is probably no annual gathering of telephone people in the world as comprehensive in the breadth of the field covered or as instructive from the standpoint both of discussions and exhibits, as the national convention of the United States Independent Telephone Association.

The Independent telephone man in the United States is fortunate in that he has always within reaching distance the latest developments in the art of telephony, the newest thought and ideas concerning telephone business procedures, and thousands of other Independent telephone men with whom he can, with little difficulty, exchange ideas. In fact, if he does no more than to attend his own state telephone convention annually and at least some of his state district meetings, and attend the national convention annually, and read the telephone magazines, he can hardly fail to be kept fairly well abreast of telephony in both theory and practice.

These are some of the reasons why telephone conventions are held. There are other good reasons, of course. There is the opportunity to foregather every so often with kindred souls; to maintain old friendships, renew acquaintances and to make new friends. There is the opportunity to combine a bit of pleasure with business—and that is a good thing, every so often, for any man. There is the opportunity to do your part in benefitting the industry at large and, above all, there is the opportunity to learn and to grow—and when a man stops learning about his business he has stopped progressing in it.

Come to the convention!

A SHORT STORY about LONG LIFE!

"Eveready" "Air Cell" Installations are Guaranteed to deliver a minimum of 6,000 hours of service life!

"EVEREADY" "Air Cell" Telephone Operators' Transmitter Batteries are a radical departure from old-style wet batteries. No recharging is necessary. You get them dry... hermetically sealed. There's no shelf depreciation. "Life" begins ... *only when water is added!*

"Eveready" "Air Cell" batteries are clean, neat and easy to handle. They give long life and sustained voltage... 6,000 talking hours *guaranteed*. That's only ⅛¢ per talking hour! You can get "Eveready" "Air Cell" batteries quickly.—At leading telephone supply distributors. For longer life ... greater savings ... switch to these economical batteries now!

An "Eveready" "Air Cell" installation consists of two batteries—one No. T-2600 and one No. T-1600—connected in series.

NATIONAL CARBON COMPANY, INC.

specifically

GUARANTEES

that the "Eveready" "Air Cell" Telephone Operators' Transmitter Batteries, Nos. T-2600 and T-1600—when used in the telephone service for which they are designed and in connection with transmitters of modern design, and when properly installed and maintained according to directions provided therewith—will deliver a minimum of 6,000 hours at peak transmission efficiency.

NATIONAL CARBON COMPANY, INC.

GENERAL OFFICES: NEW YORK, N. Y. • BRANCHES: CHICAGO • SAN FRANCISCO

UNIT OF UNION CARBIDE AND CARBON CORPORATION

A PRODUCT OF NATIONAL CARBON COMPANY, INC.

The words "Eveready" and "Air Cell" are registered trade-marks of National Carbon Company, Inc.

The manufacturers do their part in making the National Convention one of real value to telephone people. These pictures, taken during former conventions, and the ones on following pages depict graphically how YOU can profit by attending.

USITA To Meet In Chicago For 44th Annual Convention

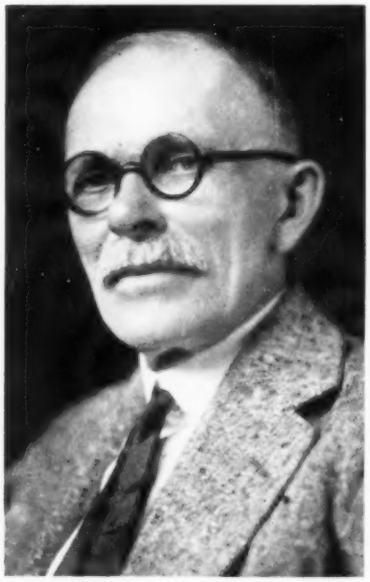
By
RAY BLAIN

NOW is the time when the National Telephone Convention comes to the aid of all good Independent telephone men. Yes, now is the time to start making plans for a pilgrimage to the world's telephone capital, the city of Chicago, to attend the 44th Annual National Convention of the United States to be held at the Stevens Hotel, October 15th to 18th, inclusive. There is no doubt but that this Convention presents a golden opportunity for wide awake progressive telephone men and women to keep abreast of our rapidly expanding and changing industry. The benefits of this convention apply equally to the commercial, traffic and plant departments of any telephone company and large will be the dividends realized in having as many employees as possible in attendance.

We should indeed all feel fortunate this year that we live in a country where we are permitted to attend a meeting of such a constructive nature. Each Christmas for the past several years, I have received a small novelty from a telephone manufacturer in Europe. Last May my present for this year was received in advance and that country has since fallen to the dictator powers. We will wager that telephone conventions will not be held there now for several years to come. While we are positive it could never happen here, it is believed that we should have a feeling of pride in the fact that we are permitted to meet freely to view new developments, compare notes and solve our problems which are all so necessary for the advancement in the art

Convention Visitors Subject to Draft Can Register

Arrangements will be made for those who are subject to the Selective Service Act to register on October 16, the second day, of the Convention, as effectively as though they were to stay home.



Vice President John H. Wright

President J. F. O'Connell
Madison, Wisconsin

Executive Vice-President Louis Pitcher

Official Program

UNITED STATES INDEPENDENT TELEPHONE ASSOCIATION

FORTY-FOURTH ANNUAL CONVENTION PROGRAM

TUESDAY, OCTOBER 15, 9:00 A.M. REGISTRATION 25th Floor Lobby

10:00 A.M. VISITING EXHIBITS

2:00 P.M. GENERAL OPENING SESSION: (Tower Room — 29th Floor)
President's Annual Address, J. F. O'Connell — Reports of Officers — Miscellaneous Business

WEDNESDAY, OCTOBER 16

Arrangements will be made to permit men of draft age to register.

9:30 A.M. ANNUAL BUSINESS MEETING INDEPENDENT PIONEER TELEPHONE ASSOCIATION OF THE UNITED STATES (Tower Room — 29th Floor)
Address by William Dern

12:00 NOON. COMPLIMENTARY LUNCHEON TO VISITING LADIES and Style Show — Walnut Room, Marshall Field's.

2:00 P.M. GENERAL SESSION (Boulevard Room, Second Floor)
Address: "Radio Frequency Modulation and Demonstration"
by Dr. Ray H. Manson.
Election of Directors.
Reports of Committees on Toll Compensation — Fire Insurance — National Defense — Wage-Hour.
VISITING EXHIBITS.

THURSDAY, OCTOBER 17, 9:30 A.M. DIVISION CONFERENCES

Accounting (North Ballroom — Third Floor)
Commercial (Tower Room — 29th Floor)
Plant (Tower Room — 28th Floor)
Traffic (North Assembly Room — Third Floor)

2:00 P.M. Boulevard Room (Second Floor)
Address: Mr. Cornelius Vanderbilt, Jr.
Address: Mr. W. J. Cameron of Ford Motor Company

7:00 P.M. PIONEERS' BANQUET, ENTERTAINMENT AND DANCE

FRIDAY, OCTOBER 18, 9:30 A.M.

Address: Mr. W. S. Devereaux of Federal Bureau of Investigation, Chicago.
Address: "Co-ordination of Independent Telephony with the U. S. Army in Its Present Defense Program"—by Major John C. Grable, Signal Corps, U. S. Army.
National Problems—C. C. Deering, Secretary-Treasurer.
Reports of Committees. OPEN FORUM.
ADJOURNMENT SINE DIE.

STEVENS HOTEL, CHICAGO

MANUFACTURERS' HEADQUARTERS – 25th FLOOR

A part of Stromberg-Carlson's 1940 exhibit is pictured here.

of spoken word communication systems.

Probably few realize fully what an important part the manufacturers of telephone equipment play in the making of our National Telephone Conventions the great success they now are. These manufacturers at great expense arrange attractive and educational displays of telephone materials and equipment which may be enjoyed by all who visit their rooms. Display boards are often arranged to show to advantage the various materials and tools. Testing machines are also often arranged to prove the qualities of certain materials. In addition to this, each manufacturer has several experts in attendance to explain in detail all features regarding the selection and use of their products to obtain best results. These men will always be found ready and willing to listen to your problems and give advice as to how they may best be solved. While it is quite true that their object is to sell their products, for it is fully realized that they cannot exist without repeat orders, naturally, they are careful not to advise the purchase of anything that will not react to the general benefit of the purchaser. I personally have obtained much useful information from contact with various manufacturer's representatives and time spent with them has always proved to the greatest benefit.

EACH year there are over fifty manufacturers who maintain exhibits at the National Convention. These are usually listed by room numbers on the back pages of the program furnished each visitor at the time of registration. This list may be used as a convenient means for checking off the exhibits visited to make sure that you do not miss any of them. A good plan is to watch advertisements in the TELEPHONE ENGINEER, or other journals, throughout the year and make a list of the principal items of material or equipment you want to investigate while at the Convention. Other special items seen for which you may have a need should also be listed in order that they may be investigated and the type selected that best meets your requirements. The manufacturers as visited should then be checked off the program list, to insure that you have not missed any of them. This will ordinarily prove a better plan than working down a hall and taking each exhibit in sequence as some may be found crowded and to obtain proper attention and complete answers to your questions, it will prove more satisfactory to skip some and then come back later when they are not so busy and will be able to give you proper attention.

The various manufacturers also arrange many interesting features such as sound pictures, lectures and equipment demonstrations. The pictures used are carefully edited so as to be instructive as well as entertaining. While it is true that these

Vice President W. C. Henry

pictures do describe a certain product, how it is made and used, it also provides information most useful to the average telephone man. Pictures of this type have proved an ideal means of instruction in various industries. The demonstrations also prove most useful to all telephone men who have an honest desire to learn more about their chosen profession. Automatic and manual switching systems will be hooked up and working to demonstrate how certain problems may be solved in your exchange. These demonstrations will indicate clearly how equipment will operate under adverse climatic conditions. The splicing of wire or the repair of cable may be explained with an appropriate, although short, lecture. The construction of dry cells and storage batteries may be explained by the aid of cut-away models. Rectifiers, charging control and ringing systems may be demonstrated effectively. The lifting power and control of a chain hoist may be explained by lifting a weight on a rack. These are only a few of the many demonstrations frequently used which always prove of special interest.

In addition to the equipment exhibits

THE SINGING MARINES with Blanche Bradley, dramatic soprano, will entertain you at the Pioneer banquet.

You will always find interesting exhibits showing latest equipment in most exhibit rooms.

and demonstrations, interesting and instructive literature is handed out by manufacturers which should be retained and filed for future reference. Literature is extremely scarce on all telephone subjects and manufacturer's catalogues always prove useful and complete files, when available, should be carefully preserved. Each year at the National Telephone Convention, I obtain valuable additions for my telephone library. Notes should also be taken on items of special value for use in your exchange so that they may be ordered, if required. Material required may be ordered from the manufacturer's representatives at the Convention when you so desire.

SOME may claim that they do not have time, while attending this Convention, to visit all the exhibits. While it is true there are numerous things to do and see, if you budget your time properly you will be able to visit them all at some time during the four-day period. Neither, however, do we advocate that you miss any of the meetings or features of the program, but that the time in between which would ordinarily be wasted may be utilized to advantage

Ladies' Entertainment

Mrs. E. C. Blomeyer, Chairman
Mrs. J. F. O'Connell, Vice-Chair.
Mrs. G. B. Foscue
Mrs. F. R. McBerty
Mrs. H. T. McCaig
Mrs. A. Partlett, Jr.
Mrs. Louis Pitcher

All visiting ladies will be guests at a luncheon and style show Wednesday noon at Marshall Fields store.

List of Exhibitors

ROOM NO.	EXHIBITOR
2539 & 2540	American Crossarm & Conduit Co.
2527	American Steel & Wire Co.
2503-2510	Automatic Electric Co. American Automatic Elec. Sales Co.
2551A	Banks Mfg. Co.
2555-A & 2556-A	L. M. Berry and Company
2528A	Buckeye Tel. & Supply Co.
2557-A	Burgess Battery Co.
2558-A	A. B. Chance Company
(Booth in Elevator Lobby)	Churchill Cabinet Company
2559	Coffing Hoist Company
2513-A & 2514-A	Cook Electric Company
2540-A	Copperweld Steel Co.
2509-A	W. C. Dillon & Co., Inc.
2516	The Electric Storage Battery Co.
2532	Elliott Addressing Machine Co.
2529	The Everstick Anchor Co.
2515	Fansteel Metallurgical Corp.
2510	General Cable Corp.
2537	Gould Storage Battery Corp.
2504A	Gray Mfg. Co.
2562	W. A. Hammond Drierite Corp.
2563	Harding Universal Tel. Repeaters
2555-A & 2556A	Gustav Hirsch Organization (with L. M. Berry)
2529-A	Holtzer-Cabot Electric Company
2539-2540	Hubbard and Company
2558	Independent Pioneer Tel. Ass'n.
2534	James R. Kearney Corp.
2500-02 & 2501A, 02A	Kellogg Switchboard & Supply Co.

ROOM NO.	EXHIBITOR
2558	John C. Larkin and Co.
2511-2514	Leich Sales Corporation
2517	Lenz Electric Mfg. Company
2552A	Loomis Advertising Co.
2515-A	Lorain Products Corp.
2560	The MacGillis & Gibbs Co.
2553A	National Carbon Co., Inc.
2554-A	The National Telephone Supply Co.
2525	Naugle Pole and Tie Corp.
2518-2523	The North Electric Mfg. Co.
2531	Page and Hill Co.
2560A-61A	Peatrophone Corp.
2507A	Philco Radio & Television Corp.
2552	H. K. Porter, Inc.
2535	Postal Telegraph-Cable Company
2557	Ray-O-Vac Company
2503-A	Raytheon Mfg. Company
2508A	Recordak Co.
2510A & 2512A	Reliable Electric Co.
2530	John A. Roebling's Sons Co.
2556	Runzel Cord and Wire Co.
2530-A	Schauer Machine Co.
2561	M. C. Sellers
2528	Shallcross Mfg. Company
2516A	Signal Eng. and Mfg. Co.
2532-A to 2537-A	Stromberg-Carlson Tel. Mfg. Co.
2555	Suttle Equipment Co.
2533	Taylor Colquitt Co.
2559-A	TELEPHONE ENGINEER Pub. Corp.
2538	The Telephone Repair Co.
2539-A	Telephony Publishing Corp.
2549-2550	Texas Creosoting Co.
2553	The Union Electric Co.
2536	Unique Mfg. Company
2549-A	Vandever & Walker, Inc.

in the visiting of these interesting exhibits.

There are numerous Indepentent Telephone Companies who do not have engineering departments, laboratories or other means of solving their problems as do some of the larger companies. For these men, the National Convention with numerous manufacturer's exhibits and their representatives, provide an ideal means of solving these bothersome problems, which, for example, might be in the nature of a transmission complaint that could be solved by the replacement or addition of certain parts of equipment. A special switchboard might best solve a certain traffic problem. The installation of a new ringing machine would eliminate bell trouble of long standing. The size of the contemplated new storage battery would be accurately calculated or a charging set could be selected which would best meet a peculiar condition. Pole hardware which was not known to exist might be found ideal for a certain need and permit a considerable saving in construction costs. A new type of protector would be quickly adopted for future use and many labor saving tools discovered which have been needed for years. This is only an example of what the average telephone man will find at the National Convention which will prove of special interest and of lasting benefit. Even the representatives of the larger companies will find the manufacturer's exhibits an excellent means of bringing themselves up-to-date and numerous will be the items of interest they will see.

Interesting visits may be arranged during the convention to the plants of various manufacturers located in Chicago. These visits always prove valuable from an educational standpoint for they leave a lasting impression as to how equipment is developed, manufactured and tested. We all seem to have a feeling that we understand equipment better if we have had the pleasure of seeing it in the process of manufacture.

Small private conferences among telephone men from different sections of the country always prove of mutual benefit. The exchange of ideas is a wonderful thing in any business and this is especially true of the independent telephone industry. It is always a real pleasure to listen while any man explains how a particularly difficult problem has been solved by his company and it will also give others good ideas as to how similar problems may be approached in various other sections of the country. When a number of telephone men or women from various sections of the country get together and talk shop it invariably reacts to the benefit of all. Yes, verbal wire stringing is a lot of fun and this is always done in a big way at the National Telephone Convention.

Pioneer Entertainment Committee

George Rodormer, Chairman, Reliable Electric Co.

John Jaap, secretary-treasurer, Cook Electric Co.

Marty Bellion, Kellogg Switchboard & Supply Co.

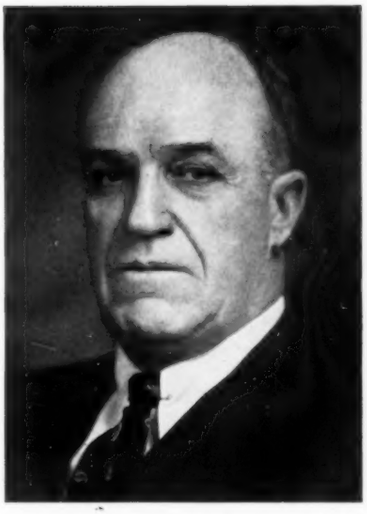
Roy W. Siemund, Leich Sales Corp.

Theodore S. Gary, Automatic Electric Co.

G. A. Berting, North Electric Co.

H. T. McCraig, Stromberg-Carlson Tel. Mfg. Co.

Frank Eldridge, manufacturers agent.



C. C. Deering, secretary-treasurer of the National Association.

WE do not intend to infer that the regular, accounting, commercial, traffic and plant conferences are not of

The Commercial Conference

Mr. Ray W. Smith, Editor
TELEPHONE ENGINEER PUBLISHING COMPANY
7720 Sheridan Road
Chicago, Illinois

Dear Mr. Smith:

I was much interested in reading your editorial "Back to the Farm" as it appeared in your September 1st issue of FORTNIGHTLY TELEPHONE ENGINEER.

For your information, during the Commercial Conference which will be held Thursday morning, October 17th, at the National Convention, members of the Executive Committee of the Indiana Telephone Association are going to discuss their report on the Argos, Indiana Survey of the rural telephone situation. From what information I have now that discussion will follow somewhat the line suggested in your editorial.

Our program for the Commercial Conference has been prepared with the idea of appealing to all sizes of companies. Only three subjects will be formally presented as we hope to have considerable discussion originate from the floor. Dr. O. M. Vaughan, President of the Tri-County Telephone Company, South Haven, Michigan, will display and explain his new equipment for photographic billing. Radio-Telephone Service in British Columbia will be discussed by Mr. James Hamilton, Vice-President of the British Columbia Telephone Company, Vancouver, B. C., Canada. The final number will be the Argos Report.

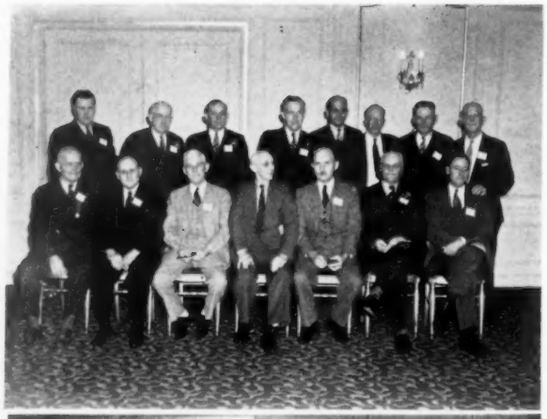
It is a varied and somewhat novel program which should be of interest to the largest companies, to those operating many exchanges and to the individual operator. Your editorial seems to cover the rural picture very well and we hope the above mentioned Argos Report will incite good discussion.

We hope for a good attendance and for some new thoughts. Until we see you in Chicago, best regards to you, from

Yours sincerely,

(Signed) Leland Wright, Chairman
Commercial Committee
USITA

LW:N



A group of Association executives that were present at the last National Convention. They are expected back this year.

SAM H. SHUTT
President of the Independent Pioneers.

Traffic Conference

RAY W. SMITH, Editor
TELEPHONE ENGINEER
CHICAGO, ILL.

Dear Sir:

At the coming convention of our National Association, on Thursday, October 17, at 9:30 A. M., the Traffic Department will have a conference in the North Assembly Room—third Floor of the Stevens Hotel.

The Traffic Committee is pleased to announce that the following program will be presented:

Mr. G. E. Slusher, General Traffic Superintendent of the Pennsylvania Telephone Corporation, Erie, Pennsylvania, will present the subject "Switchboard Bulletins and Related Records," and will give the high points on the subject "Aircraft Warning Service."

Mrs. Mayme Workman, Traffic Supervisor for the Illinois Telephone Association, Springfield, Illinois, has been assigned the subject, "My Reaction Following a Three-Day Chief Operators School."

Miss Cecelia M. Burke, Supervisor of Methods and Practices, Commonwealth Telephone Company, Madison, Wisconsin, will present the subject, "Secrecy of Communications."

Miss Margaret Werel, Toll Chief Operator, LaCrosse Telephone Corporation, LaCrosse, Wisconsin, will have charge as "Chairman of an Open Forum."

I am sure you will agree with me that this will be a most interesting program. Hope to see you at the meeting.
With kindest regards, I am

Yours very truly,
(signed) R. F. PAGELS
Chairman, Traffic Committee VSITA

general interest and benefit because they most certainly are. We do believe, however, that the average telephone man will tell his story in a small meeting, but will not, as a rule, speak up and air his ideas at regular conference meetings. The programs arranged for the regular conferences and open forum meetings are always well attended and do prove of great benefit to all. We, therefore, suggest everyone plan to attend all conference meetings and then discuss them in detail later in small private conferences in the display rooms of the manufacturers.

The speakers and other program features are always of special interest at the National Convention. Telephone subjects and legislation affecting the industry in general are always covered by these talks. Your National Association deserves a lot of credit for arranging these conventions which grow bigger and better year after

(Please turn to page 50)

Claire & Hudson (Claire is a dead-ringer of Norma Shearer) will also entertain at the Pioneer banquet.

ON THE NEWS FRONT

Defense Cooperation

AN advisory committee, representing both the Bell System and the Independent Telephone industry, will work closely with the newly created Defense Communications Board which was just established by President Roosevelt to coordinate and study planning of all branches of communications for national defense particularly in event of war. With the extremely serious situation growing out of the threat of the new Axis formation of Germany–Italy–Japan, the DCB is anticipated to expedite its functioning at a much greater impetus than was contemplated when its creation was originally disclosed two months ago.

The Defense Communications Board is headed by FCC Chairman James Lawrence Fly and has as other members Major General Joseph O. Mauborgne, Chief Signal Officer of the Army; Rear Admiral Leigh Noyes, Director of Naval Communications; Assistant Secretary of State Breckenridge Long and Assistant Secretary of the Treasury Herbert E. Gaston. Mr. Long is in charge of the State Department's division of international communications and Mr. Gaston who is secretary of the new board has under his control the Coast Guard.

The telephone industry has received most complete assurance from the Board that there is NO aim or desire to take over the control of its facilities and operations and that the prevailing policy is to continue private management with the least disturbance possible of normal functioning even in event of war. The Board is basically a planning and coordinating agency with the objective of formulating the most adequate and efficacious methods of communication service to meet the emergency and extraordinary requirements of national defense and war.

President Roosevelt created the DCB under the authority of the Communications Act which meant the Board would be chiefly concerned with the national defense preparedness planning of communications under Section 606 (the war Emergency Powers of the President) in its formulation of recommendations. This means that the DCB will be principally concentrating on the radio provision of that Section which permits the President to take over the radio stations under the control of the government in time of war. Section 606 in regard to the telephone industry only requires that national defense needs receive the utmost priority and preference. In addition, there is a provision to permit the President to assign military forces to guard the facilities of telephone companies to prevent sabotage by spies and Fifth Columnists.

The DCB will undoubtedly study the nation's telephone facilities from the standpoint of ascertaning where and in what localities the normal peace-time telephone wire plant is not sufficient for military needs—this may mean that in sparsely settled sections of the country, especially along the Mexican border and along both coasts and the Gulf some special telephone construction, possibly by the Army, may be put into effect. Another subject of study will be the various routings of the national toll system to disclose all possible alternate routings which could be used in case of air bombing destruction of certain routes. The Army and Navy, too, have plans for the use of large amounts of telephone and teletype wire facilities in event of war and these needs will be analyzed from the standpoint of the existing telephone plant.

The DCB is seeking to plan communications requirements in event of war from three phases. First, it will study the needs of facilities—(all important)—for the armed forces of the United States Army and Navy. Second would be the requirements of the industrial plants which furnish the national defense equipment and material. Finally would be considered the facilities needed for the normal functioning of the civilian population.

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National Defense Fields of Importance to Telephone Industry

IMPORTANT aspects of national defense which the telephone industry should follow are myriad, but the following two phases are matters which deserve the closest attention of telephone companies in cooperating with the military authorities, particularly the Army Signal Corps:

The many scores of new encampments and air fields of the Army which are to be constructed in the next few months to take care of the National Guard mobilization and conscription forces are to receive telephone service on the rental or total commercial basis. This was disclosed by the Signal Corps fiscal officer before a Congressional Committee and is contrary to the usual Army policy of relying on its own construction and operation of telephone service for its forces. But the reliance that the Army Signal Corps places on the telephone companies to give service to the new camps and air fields demonstrates their confidence and satisfaction in the efficiency of the American telephone companies and the industry has to guard zealously this reputation in meeting these extraordinary requirements of national defense. There has been the utmost cooperation between the army and the industry, particularly from the Bell System in the national defense planning, it is known.

The Aircraft Warning Service—the extensive telephone networks with civilian observers which have been tested with great success in three major Army maneuvers—is expected to become a most essential and integral part of the defense of the United States in the event of war. Evolved by the coordinated effort of the American Telephone and Telegraph Co. and the Army Signal Corps, the Aircraft Warning Service has been one phase of the maneuvers about which there has been no criticism and in fact the highest praise. Therefore, this is a form of defense cooperation that merits careful study by the entire telephone industry.

JOINS TELEPHONE ENGINEER

DON C. SORENSEN has been named Sales Promotion Manager of TELEPHONE ENGINEER. He brings to our staff an experience of 13 years serving the industry with telephone publications.

By ROLAND C. DAVIES
Editor
Telecommunications Reports

FCC Launches Expansion Of Regulation

THE FCC during the remainder of its present fiscal year up to next June 30 will engage in an expansion of its telephone regulatory functioning under a new appropriation of $125,000, which seemed certain of congressional approval, which it hopes will lead to the awarding of larger future funds for telephone supervision. The $125,000 was appropriated on the basis of the remaining eight months of this fiscal year and was obtained by the FCC after three previous unsuccessful attempts to win such additional funds for telephone regulation from Congress.

To a major extent the $125,000 will be concentrated on the regulation of the interstate telephone rates of the American Telephone and Telegraph Co. and the Bell System, but FCC Commissioner Paul A. Walker who directs the telephone regulatory activities of the Commission plans to assist State Commissions in their local or statewide rate investigation whenever the latter agencies seek the cooperation of the Federal body. For the Independent industry, Commissioner Walker has indicated that the new telephone regulatory activities will include a study of the division of tolls between the Bell System and the Independent connecting companies.

Under the $125,000 appropriation, it is the plan of Commissioner Walker to establish immediately a special rate and research unit within the staff of the FCC to concentrate on telephone regulatory matters and this group is to be composed of three lawyers, eleven engineers, seventeen accountants and 52 clerks, having a travel fund of around $25,000 for the cooperation with State Commissions. Other subjects to be taken up by this unit will include the surcharge of hotels on interstate toll calls; the manufacturing costs of various types of telephone apparatus with Western Electric as the particular target and Independent manufacturing companies used to show lower costs; and the formulation of a depreciation accounting policy with especial reference to the reserve.

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Jurisdictional Issue

ONE of the most important decisions for the telephone industry that has appeared before the FCC in its first six years is the jurisdictional issue of whether or not the Federal Commission has the power to supervise interstate rates in a local exchange area. This question which has arisen in connection with the interzone interstate rates of the Southwestern Bell Telephone Co. in the Kansas City exchange district (embracing the two Kansas Cities in Kansas and Missouri) is now awaiting final FCC decision.

Because the Communications Act in its Section 221 (b) seems to expressly prohibit FCC jurisdiction over all exchange service though the latter should contain some interstate communication, the Southwestern Bell has told the Commission that if it assumes authority in the Kansas City case it will sound "the death knell of state regulation of telephone rates." The Southwestern Bell cited that the situation of interstate service in exchange areas would apply to many communities throughout the country and noted that such a status prevailed in 17 exchanges along the Missouri-Kansas border. "From this," the Southwestern Bell contended in a brief to the FCC, "it is but a step to extend the jurisdiction of the FCC into every community, wherever located, because under present rate making practices the exchange rate pays for the service from the subscriber's instrument to the toll board on interstate calls."

This jurisdictional question is one which might mark the wedge of FCC incursion into state regulation, it is felt by State Commission representatives, and is a decision of greatest interest to the entire telephone industry, both Bell System and Independents. If the FCC should hold that is has the authority to assume regulation of interstate rates in exchange areas, it is certain that a court text will be sought.

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Convention Dates

United States Independent Telephone Association, Hotel Stevens, Chicago, October 15, 16, 17 and 18.

Independent Pioneer Telephone Association, Hotel Stevens, Chicago, October 16 and 17.

Tennessee Independent Telephone Association, Hermitage Hotel, Nashville, October 28 and 29.

Alabama Independent Telephone Association, Jefferson Davis Hotel, Montgomery, October 31 and November 1.

Florida Telephone Association, Angebilt Hotel, Orlando, November 7 and 8.

South Carolina Independent Telephone Association, Wade Hampton Hotel, Columbia, November 11 and 12.

North Carolina Independent Telephone Association, Sedgefield Inn, between High Point and Greensboro, November 14 and 15.

Virginia Independent Telephone Association, Roanoke Hotel, Roanoke, November 18 and 19.

Missouri Telephone Association, Muehlebach Hotel, Kansas City, November 18 and 19.

Kentucky Independent Telephone Association, December 3 and 4.

Wage-Hour

THE long-awaited decision of the Wage and Hour Division on the learner telephone operators' wage exemption brought practically no change to the original order except that the Division agreed to grant a period of one year for the duration of learner certificates. The only other revision was the clarification and elimination of the requirement for telephone companies to ascertain before hiring learner operators whether any experienced operators in their communities were unemployed.

The review finding which was promulgated Sept. 27 by Colonel Philip B. Fleming, Wage-Hour Administrator, retained the minimum wage of 25 cents an hour for learner operators and the training period of 320 hours. It also held the original order's provisions of the number of learners to total operators should go into effect. These regulations provided the following: 1 learner in exchanges employing up to 8 operators; 2 learners in exchanges with 9-18 operators; 3 in exchanges with 19-30 operators and 4 in exchanges with 31-44 operators, while above that latter number 1 learner was allowed for every 15 additional operators.

The new regulations for learners certificates became effective immediately and the Wage-Hour Division announced that it would supply forms for applications to companies. Only about 15 Independents had applied for learners certificates under the previous order which had stipulated the learners certificates were valid only until next December 31.

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REA Tests of Telephone Service on Power Lines Far From Completion

THE Rural Electrification Administration has been engaged in one series of experiments in superimposing carrier

(Please turn to page 57)

Short Course in Telephone Transmission

By
B. C. BURDEN

Telephone Transmission Measurements

(Cont. from last issue)

Calibrating an A.C. Voltmeter to Read in Decibels

MANY telephone companies have on hand rectifier type A.C. voltmeters either in the form of a multi-range tester, or simply an individual voltmeter. Such instruments can be used as decibel meters for attenuation measurements by working out a table for converting voltage readings to db.

In order to arrange a conversion table for any voltmeter we must first establish two factors, viz:

(1) What **zero reference level** will we use?

(2) For what **impedance** will we establish our table?

The **Bell Telephone System** some time back established a zero reference level based on **.006 watts.** This amount of power was thought to be approximately equal to that from a typical C. B. subset. In recent years there has been a tendency on the part of the Bell System and others to use **.001 watts** as zero reference level. The adoption of the new reference level has probably resulted from the grater mathematical convenience inherent to a level of .001 watts as compared to .006 watts.

It should be appreciated that the actual value of zero reference level does not affect the results obtained in making a transmission measurement. It is the writers belief that the new reference level of .001 watts should be used, and that calibration of meters should be based on 600 ohms impedance.

Conversion of Volts to DB

THE conversion of volts to db's, as has previously been stated requires first establishing the zero reference level and impedance at which the calibration is to hold.

To illustrate the method employed in calibrating a voltmeter to read in decibels let us assume that we have

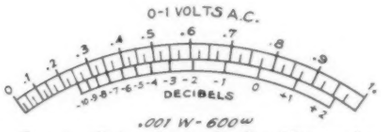


Fig. 1—O-1 volt A. C. Rectifier meter calibrated to read Power Level—Z. 600 ohms. R.L. .001 watt.

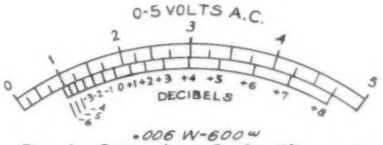


Fig. 2—O-5 volt A.C. Rectifier meter calibrated to read Power Level—Z. 600 ohms. R.L. .006 watts.

on hand a rectifier type A.C. voltmeter whose range is 0 to 1.0 volts and that we wish to prepare a conversion chart so that this instrument can be used as a decibel power level indicator. Now first we will decide on a zero reference level of .001 watts and an impedance of 600 ohms. We next must determine what voltage would result with a power of .001 watts dissipated across 600 ohms. This is accomplished as follows:

$E = \sqrt{PZ} = \sqrt{.001 \times 600} = 0.775$ volts

where:

E = Volts
P = Watts
Z = Ohms

That is: zero reference level is 0.775 volts across 600 ohms. With our **zero reference level voltage** established we can by reference to a table of voltage ratios vs decibels quickly determine the decibel reading corresponding to any voltage reading.

To illustrate suppose that when using our voltmeter to measure the attenuation loss in a telephone line, we feed into the line under test 0.775 volts (zero level) and that at the distant end of the line under test we measure approximately 0.193 volts. The ratio of output to input voltage is 0.193/0.775 = 0.249. From our table of voltage ratios vs db we find that a ratio of 0.249 corresponds to a loss of 12 db.

Now in using a voltmeter for attenuation measurements one can either determine for each set of measurements the voltage ratios involved and then by reference to the db vs voltage ratio table determine the corresponding number of db, or a simple conversion table can be made up which will show the power level in decibels for any voltage reading. If desired the db readings thus computed can be marked directly on the meter dial by removing the protective case from around the dial and recording opposite each voltage reading the corresponding db reading.

Data for calibrating an O-1 voltmeter at 600 ohms, and .001 watt is given in table No. 1

Voltage Reading	db Reading
0.976 volts	+ 2 db
0.869 "	+ 1 "
0.775 "	0 "
0.691 "	— 1 "
0.616 "	— 2 "
0.548 "	— 3 "

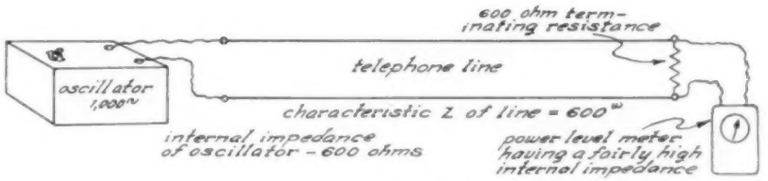

600 ohm terminating resistance
telephone line
oscillator 1,000~
characteristic Z of line = 600ω
internal impedance of oscillator - 600 ohms
power level meter having a fairly high internal impedance

Fig. 3—Proper Termination of lines and apparatus for Attenuation Tests.

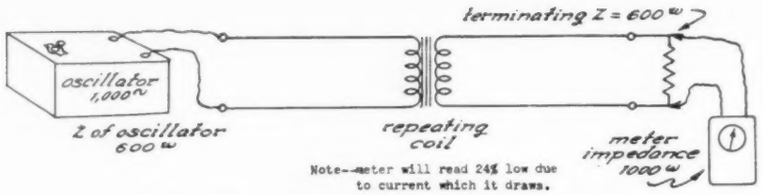

terminating Z = 600 ω
oscillator 1,000 ω
Z of oscillator 600 ω
repeating coil
meter impedance 1000 ω
Note--meter will read 24% low due to current which it draws.

Fig. 4—Effect of Meter Impedance on Measurements.

0.489	"	— 4 "
0.436	"	— 5 "
0.388	"	— 6 "
0.346	"	— 7 "
0.308	"	— 8 "
0.275	"	— 9 "
0.245	"	—10 "

Table No. 1—Conversion data for 0-1 volt A. C. meter at .001 watt and 600 ohms.

Fig. 1 shows how the dial of an Q–1 A.C. voltmeter would be marked for db readings based on the Conversion data of table No. 1.

Conversion Data for an 0-5 Volt Voltmeter

TO further illustrate the use of an A.C. voltmeter for db measurements, let us consider a meter having a scale range of 0 to 5 volts. This range is more common, than the O-1 volt range, however, for general telephone plant testing is not quite as useful because of the reduced sensitivity of the 0 to 5 voltmeter as compared to an 0 to 1 voltmeter.

Inasmuch as there are several commercial power level indicators that utilize an 0 to 5 volt scale with a zero level of .006 watts (see Fig. 2) we have shown in table No. 2 the conversion data for such a meter. It will be noted that using .006 watts for zero reference level the corresponding voltage at 600 ohms is 1.89 volts. This is obtained by the relationship:

$$E = \sqrt{PZ} = \sqrt{.066 \times 600} = 1.89 \text{ volts}$$

Voltage Reading	db Reading
4.75 volts	+8 db
4.23 "	+7 "
3.77 "	+6 "
3.36 "	+5 "
2.99 "	+4 "
2.67 "	+3 "
2.38 "	+2 "
2.12 "	+1 "
1.89 "	0 "
1.68 "	—1 "
1.50 "	—2 "
1.34 "	—3 "
1.19 "	—4 "
1.06 "	—5 "
0.94 "	—6 "

Table No. 2—Conversion data for an 0-5 volt A. C. meter at .006 watt and 600 ohms.

If we wish to use .001 watts as zero reference level on our 5.0 volt scale our data is as shown in table No. 3.

Voltage Reading	db Reading
4.89 volts	+16 db
4.36 "	+15 "
3.38 "	+14 "
3.46 "	+13 "
3.08 "	+12 "
2.75 "	+11 "
2.45 "	+10 "
2.18 "	+ 9 "
1.95 "	+ 8 "

The Plant Conference

The Plant Conference at the Convention of the United States Independent Telephone Association is scheduled for October 17, and according to Walter Dakin, general plant superintendent, Commonwealth Telephone Co., the Committee chairman, it will be very interesting and profitable conference. This seems assured by the following papers to be presented.

"The Control of Maintenance Expenses" by Mr. F. E. Behm, general plant superintendent, Lincoln (Nebr.) Telephone and Telegraph Co.

"General Engineering and Plant Problems Affecting Economical Exchange Operation" by Mr. Stuart M. Johnson, plant engineer, General Telephone System, Madison, Wis.

"The Preparation of Estimates" by Mr. J. B. Haley, Illinois Central Telephone Co., Clinton, Ill.

There will, of course, be discussion periods following the presentation of each of these papers and a general open meeting in which the plant committee will attempt to discuss questions of interest and importance to all plant men in attendance. (See the program in this issue for exact time and meeting place)

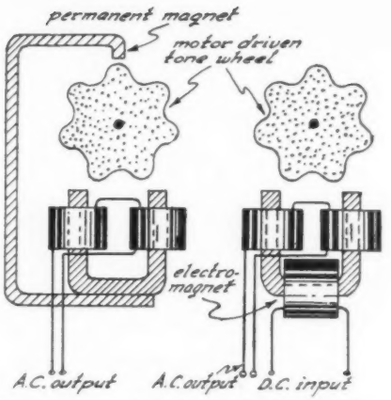


Fig. 5—General features of Inductor Tone Generators

1.74	"	+ 7 "
1.55	"	+ 6 "
1.23	"	+ 4 "
1.09	"	+ 3 "

Table No. 3—Conversion data for an 0-5 volt A. C. meter at .001 watts and 600 ohms.

Note—See table No. 1 for additional Readings.

Effect of Voltmeter Impedance on Accuracy

IN using either an A.C. voltmeter or a power level indicating for making attenuation measurements, the effect of the instrument impedance on the accuracy of the measurements must be taken into account.

Transmission measurements should always be made with lines or apparatus terminated by the impedance loading at which the line usually works. For example, a 600 ohm line should be termined in a 600 ohm load. This load may consist of a telephone (with the receiver off the hook), a 600 ohm fixed resistance, or the impedance of the power level meter itself if it is 600 ohms. This requirement is illustrated by Figure 3.

Some power level indicators are so designed that they act as the terminating impedance, hence, **all other load impedances should be disconnected.** If power level measurements are taken across a load impedance higher than normal or missing entirely, the tests will indicate that the circuit under test is more efficient than is actually the case.

In making measurements using an ordinary A.C. rectifier type voltmeter or a power level indicator, and where the meter is not designed to act as a termination for the line under test, the effect of the voltmeter impedance on the measurement must be taken into account. To illustrate, if an 0-1 volt voltmeter whose full scale resistance is 1000 ohms is placed

(Please turn to page 45)

ESTIMATING Construction Costs

The Author

By JAY G. MITCHELL

In this installment the author discusses the use of mechanical equipment for digging holes and erecting poles—Underground construction labor relatives—Use of ditching machines in trenching—Standardized trenches for cost estimating—Manholes—Labor relatives for composited manholes—Examples of short cut tabulations for expediting labor estimates.

WHEN estimating the Construction Cost of extensive pole line projects it is, of course, necessary to recognize the value of mechanical devices for digging pole holes and erecting poles in place. The economy effected in comparison with the conventional methods of hand digging and pole setting is dependent upon the type of equipment available, the nature of the territory, the character of the soil and the extent of the project. In computing the man hour relatives for mechanical methods related to units of plant it is necessary to recognize the fact that the setting of the equipment probably consumes the major portion of the man hour relatives that must be associated with the operations of digging and erecting. This may be illustrated by a consideration of the work associated with the placing of city poles. If the number of pole locations in which fences, garages, lawns and restricted available space do not preclude the use of mechanical equipment is reasonably large, and if such locations are fairly consecutive then the economy in labor per pole will be very considerable.

If the locations in which the use of mechanical equipment is possible are widely scattered and not reasonably consecutive then the economy effected in the few available locations will be subject to the offset due to the necessity of shifting the equipment considerable distances and the overall advantage will be partially or entirely lost. In long stretches of pole line in the rural and toll territory, however, there is no question of the marked economy that may be realized by the use of mechanical equipment. The man hour relative for the digging and erecting in such advantageous cases depends, however, upon the type and quantity and overall usability of the equipment available for the project. Standardized equipment for any desired type of pole line construction may be purchased in a variety of types each one of which is suitable for specialized or general use as the user may desire.

Under favorable conditions it can be safely assumed that a pole line gang provided with reasonably efficient and complete mechanical equipment for boring and erecting can set from fifty to fifty-five poles per day of eight hours. In a recent consideration of this subject the following conclusions were reached. These are given to illustrate the conditions that must be considered and are not to be interpreted as, in any sense, a considered opinion as to the availability of mechanical digging and erecting equipment in general.

THE assumption made in the third last item may or may not be correct, of course, either in the actual plant considered or in any other. The tabulation is given solely for the purpose of illustrating the factors that should be considered in any telephone plant where the use of mechanical pole digging and erecting is under consideration. Such analysis will be helpful to the engineer responsible for the making of Construction Cost

Machine Digging and Erecting

Poles so located (with reference to ditches, banks, roads and other conditions) as to render machine digging possible as disclosed by field check	9.0%
Poles on Private Right of Way	38.4%
Poles on Highway	61.6%
Poles requiring Rock Digging	13.7%
It is assumed that machine digging is not feasible for poles located on Private Right of Way.	
Poles on highway requiring Rock Digging 13.7% of 61.6%	8.4%
Poles on Highway offering possibility of machine digging 61.6%—8.4%	53.2%
If it be assumed that 20.0% of all poles NOT requiring Rock Digging can be set by machine digging then the per cent is 20.0% of 53.2%	10.6%
Of these 80.0% may be assumed to be toll or rural poles or	8.4%
Of these 20.0% may be assumed to be city poles or	2.2%

estimates and when carefully made will often be much more favorable to the use of mechanical equipment than was the case in the plant to which the illustration given was believed applicable.

In the construction of underground conduit mechanical equipment may sometimes be used to advantage. The companies which own and operate pipe lines for natural gas or for the transport of oil make extensive use of ditch diggers but, of course, the trenching required for this type of construction is located, to a preponderating extent, outside of cities. The trenching equipment used is also very costly and the same sort of consideration must be given to its availability by telephone companies as should be given to mechanical equipment for digging and erecting for pole lines. It is worthy of note, however, that trenching equipment can sometimes be secured from the owners for temporary use on a rental basis.

Accuracy in estimating the Construction Costs of underground conduit calls for the most exacting and careful work. As is the case in digging pole holes the character of the soil must be taken into consideration in the development of the labor relatives for the excavating component of the total labor.

The extreme condition, in the author's experience, is illustrated in an exchange area where a large proportion of the trenching involved quarrying operations, the subsoil being very thin and the conduit being placed in trenches blasted through sandstone. Because many city streets have been built up by the early use of cinders and ashes it sometimes occurs that the labor of trenching for underground conduit is very costly. Studies of the character of the soil should be made whenever practicable in order to obviate the likelihood of having estimates for underground conduit overrun due to otherwise unexpected difficult digging.

The conservative method appears to be to first compile a tabulation of the required cubic yards of excavation per trench foot for each standard arrangements of ducts and such a tabulation is given below for illustrative purposes. As is the case with the other illustrative tabulations given this one is not offered as a suitable guide for general use but rather as an example of the form in which such data may be assembled for the use of the estimating engineer in connection with the established practices of his company

It is, of course, true that the number of ducts in any given conduit does not, in itself, determine the average amount of excavation. That is determined by a number of factors some of the most important of which are the configuration or arrangement of the ducts together with the type of base used, the cover, the type of protective envelope and the kind of duct itself. In developing such an average tabulation the conduit configurations in established use by the company must be weighted according to the amount of each for each duct capacity. When this has been carefully done the average figures for the excavation for each duct capacity may be conservatively used thereafter in estimating man hours required for excavation. An example of such a tabulation is shown.

Cubic Yards Excavation for Composited Standardized Trenches for Various Duct Capacities

Number of Ducts	Cu. Yds. Exca. per Trench Foot
2	.15138
3	.15138
4	.20021
5	.20021
6	.20021
7	.28373
8	.28373
9	.28373
10	.31329
11	.31329
12	.35466
13	.36776
14	.41634
15	.36776
16	.33307
18	.36776
19	.43742
20	.41634
21	.57054
22	.45643
23	.45643
24	.50397
25	.70366
27	.51348
28	.50397
30	.57928
32	1.34486
36	.51348
37	.51348
45	1.33486
48	.70366

Note—Duct capacities not listed were not found in the plant.

AS AN illustration of the computation of the man hour relative for excavation the following is given with no intention of presenting the figures as suitable for general use but solely as an example of the method that may be employed. Each telephone plant will exhibit its own characteristics and these characteristics will, of course, be the controlling factors in fixing the man hour relatives for this kind of construction. In a very careful study the following was developed for one large plant.

THE thoughtful reader will at once perceive that the classification of the character of the soil exercises a controlling influence in this computation. For that reason it should be repeated that this tabulation illustrates a *method* only and cannot be considered accurate for any plant except the one in connection with whose soil conditions it was originally developed. It may be noted in passing that in large plants where several types of duct are consistently used in underground construction as well as various standards for the protective arrangements such as the base, cover and envelope then a composite material list may be developed by the use of similar methods. In definitely specified types of construction, however, the material specified must be used rather than any form of composited material list in the attainment of maximum accuracy.

(Please turn to page 49)

Weighted Average Labor Relatives for Excavation

From Pavement Record		
Per Cent. of trench feet calling for light digging		80.0%
Per Cent. of trench feet calling for hard digging		18.0%
Per Cent. of trench feet calling for rock digging		2.0%
Basic Relatives		
Man hours excavation per cubic yard Light Digging		2.0
Man hours excavation per cubic yard Hard Digging		3.4
Man hours excavation per cubic yard Rock Digging		6.8
Computation of Weighted Average Relative per Cubic Yard		
2.0 man hours times	80	160.0
3.4 man hours times	18	61.2
6.8 man hours times	2	13.6
2.4 man hours times	100	234.8
Composited man hour relative per cu. yd. of trenching for underground conduit		2.4

LaCroix, Bozell Named by General Telephone Corp.

AT the meeting of the Board of Directors of General Telephone Corporation held September 27, Morris F. LaCroix of Boston, Mass., was elected to the newly created position of Chairman of the Board and will actively devote a portion of his time to the affairs of the Corporation. At the same meeting, Harold V. Bozell, who has been Vice President of the Corporation, was elected President to fill the vacancy caused by the recent resignation of John Winn. The Board also announced the elections of Thomas A. Boyd, formerly Comptroller of the Corporation, as Vice President, and Raymond E. Dolar as Comptroller.

Mr. LaCroix was one of the original organizers, in 1926, of the Corporation's predecessor, Associated Telephone Utilities Company, and since that date has been continuously a director of that company or of the Corporation. He is a graduate of Harvard University, both from the College and in mining engineering. For several years before the last war he practiced mining engineering, and since 1919 has been engaged in mining engineering and investment banking as a partner of the firm of Paine, Webber & Co., in which partnership he still continues. He served as a Major of Engineers in the United States Army in France for two years and with the American Commission to Negotiate Peace in 1919. He is a director of various industrial and mining concerns and a member of various technical societies.

Mr. Bozell became Vice President of the Corporation's predecessor in 1932 and has been Vice President of that company or the Corporation and of certain subsidiary companies from that time until his election to the presidency. He is a graduate in Electrical Engineering of the University of Kansas. He practiced and taught electrical engineering and utility management at the University of Oklahoma and at Yale University. During the war, Mr. Bozell was in charge of training of Signal Corps non-commissioned officers for the Committee on Education and Special Training of the War Department, was head of the school for Signal Corps commissioned officers under the Chief Signal Officer and was in charge of certain engineering investigations under the Special Problems Committee of the Naval Consulting Board. He was for a short time Editor of Electrical World and was for a few years associated with the firm of Bonbright & Company, Incorporated, specializing in public utilities. He is a Fellow of the American Institute of Electrical Engineers.

Mr. Boyd, C.P.A., is a graduate of the University of Illinois and, for a number of years, was associated with Arthur Anderson & Co., Accountants and Auditors. Since 1929, he has been Comptroller of the Corporation's predecessor or of the Corporation and of various subsidiary companies. He is a member of the Comptrollers Institute of America.

Mr. Dolar, C.P.A., joined the staff of the Corporation's predecessor in 1931, and since that time has been in the Comptroller's department of the Corporation's predecessor and of the Corporation, in the past few years as assistant to the Comptroller.

The Accounting Conference

Mr. Ray W. Smith
Editor and Executive Vice President
TELEPHONE ENGINEER
Chicago, Illinois

Dear Mr. Smith:

I believe that the accounting conference this year will present an exceptionally fine program for executives and accountants. Mr. H. C. White, Auditor of the Jamestown Telephone Corporation, has been working for some time on the presentation of the problem of budget control. Sample budgets will be presented in connection with Mr. White's address, which will be followed by a round table discussion. It is proposed to present a budget plan which will be suitable for any telephone company having from 1000 to 10,000 stations.

Mr. White has had considerable experience on this subject in his own work, and by assisting other smaller telephone companies in setting up their budgets and showing their applications. Under present operating conditions budget control of operations is certainly needed more than ever before, and undoubtedly many of our telephone company members will be interested in learning more of the proper methods of the preparation and application of a budget.

If time will permit, it is the intention of the Committee to hold open discussion on any other accounting problems that may be presented.

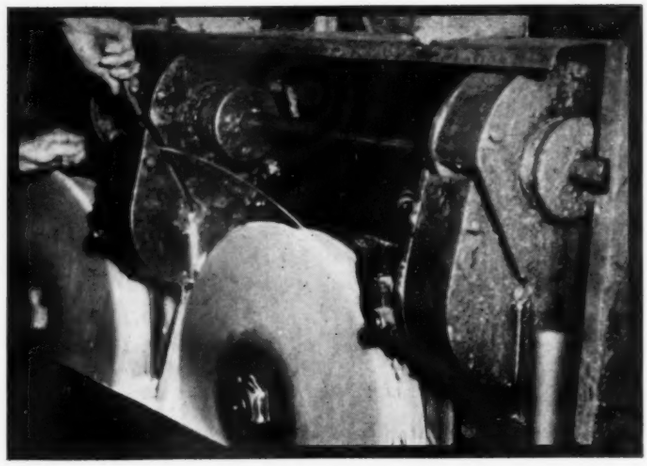
(Signed) I. J. Devoe, Chairman
Accounting Committee
USITA

Nebraska Continental Wants To Metallicize Lines

The Nebraska Continental Telephone company of Columbus filed an application with the railway commission Tuesday asking for authority to increase rates on its Palmer exchange. The company said that because of rural electrification that it wanted to metallicize its rural lines but that it could not afford to do so unless an increase was authorized.

The application stated that the improvement would cost $7,230. On the basis of present rates and with 332 subscribers the exchange's gross revenue at the end of year, May 31, 1940, was $4,760 and that operating expenses were $7,584, leaving nothing for the company. If the increase asked for is approved the company would expect $8,958 in gross revenue, while operating expenses would be $8,305, leaving a balance of $652.

The company proposes to increase the monthly rate on one party business monophones from $2 to $3.50 and on one party business wall phones from $1.50 to $3.25. On residence monophones the rate would be boosted from $1.50 to $2.25 and on wall phones from $1 to $2. On rural 10 party monophones the rate would be increased from $1.50 to $2.25 and on 10 party wall phones from $1 to $2.



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Your plant manager will become a Monophone enthusiast, too, as soon as he sees how sharply maintenance costs fall when Monophones are adopted. This is because we use only the finest materials in their construction; we reinforce every point of stress; and we have perfected their design so that all fragile, easily-broken projections have been eliminated. This structural superiority actually pays you steady dividends every month, in longer life and lessened maintenance.

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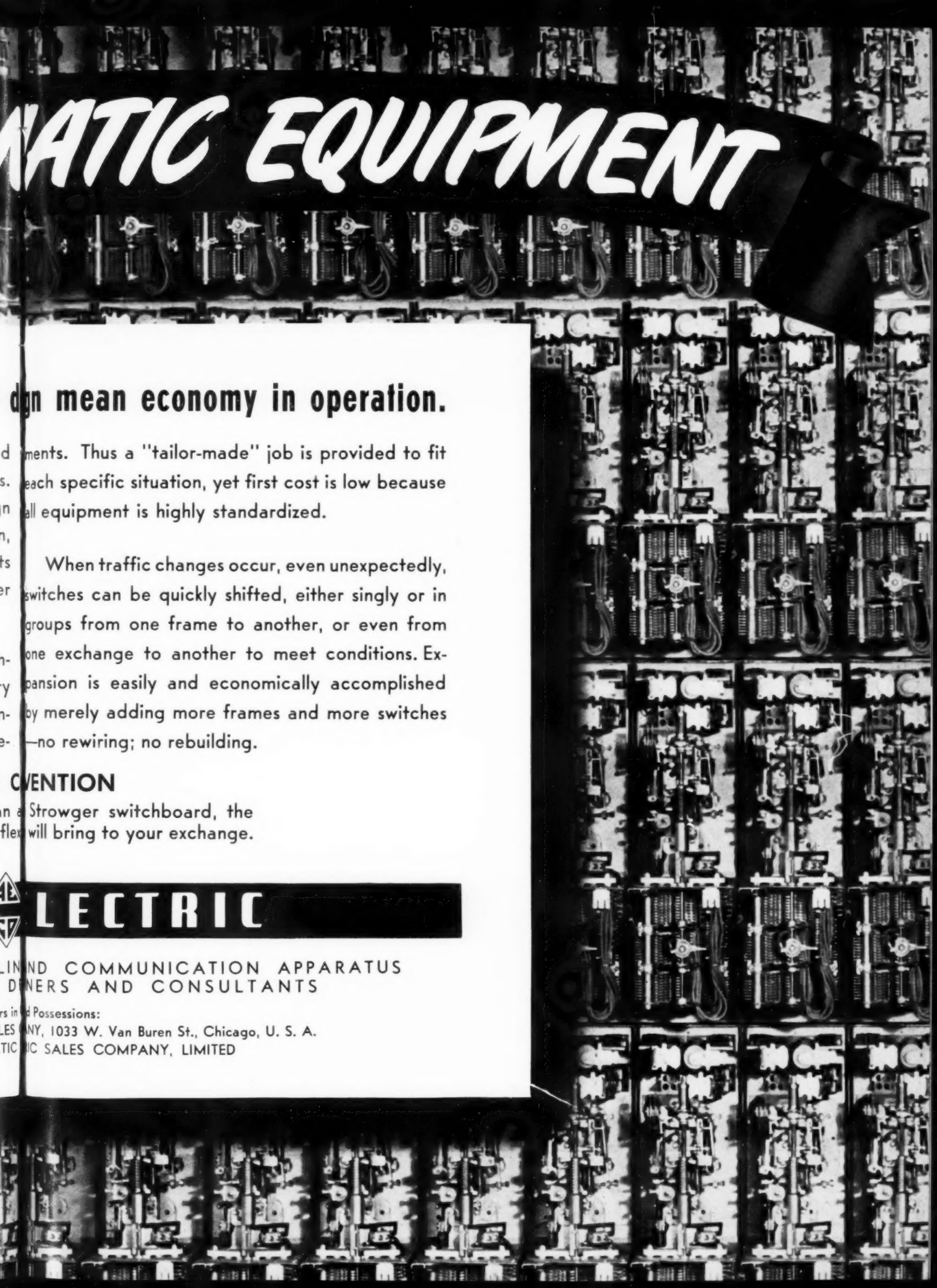

dgn mean economy in operation.

ments. Thus a "tailor-made" job is provided to fit each specific situation, yet first cost is low because all equipment is highly standardized.

When traffic changes occur, even unexpectedly, switches can be quickly shifted, either singly or in groups from one frame to another, or even from one exchange to another to meet conditions. Expansion is easily and economically accomplished by merely adding more frames and more switches —no rewiring; no rebuilding.

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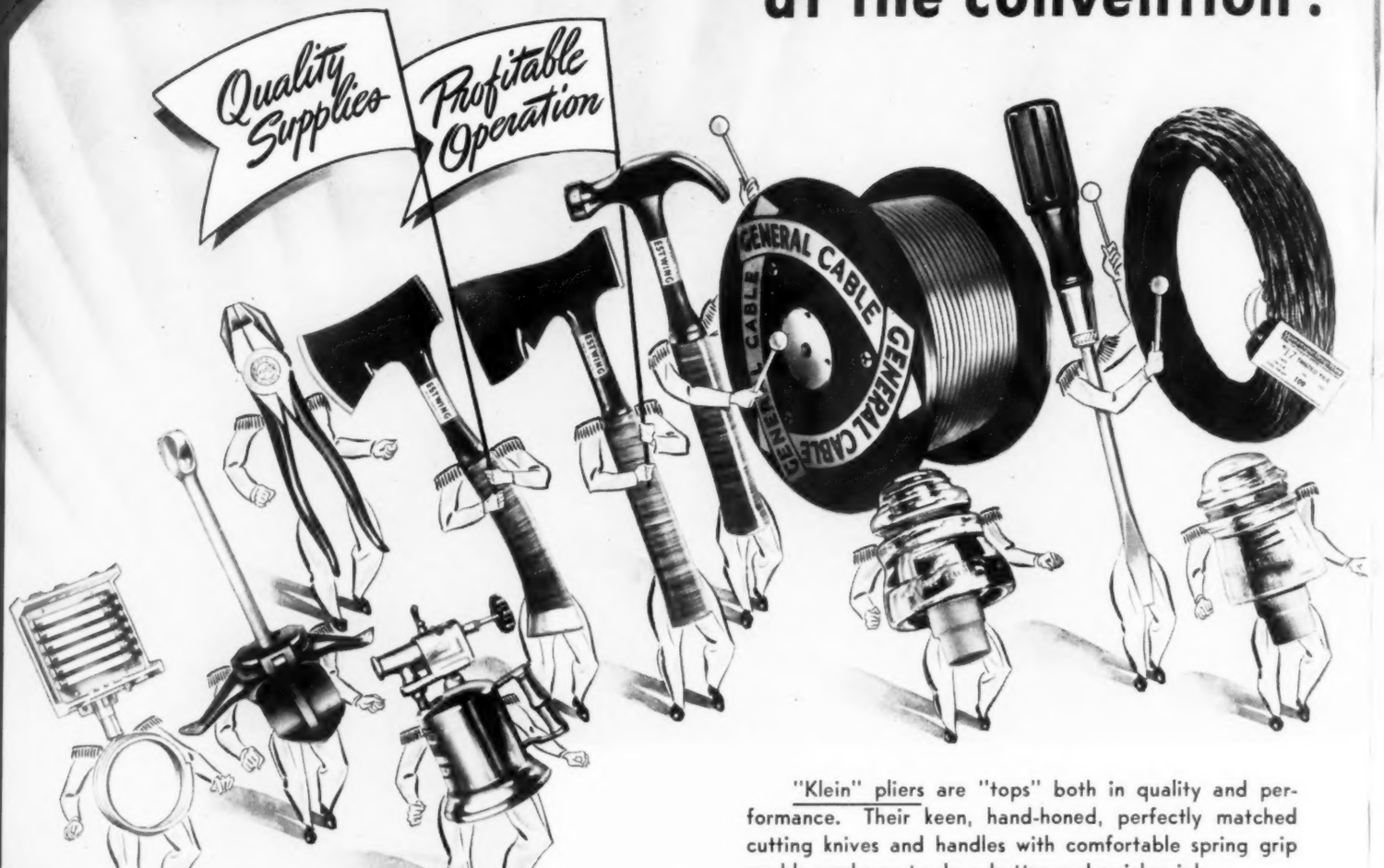

A telephone circuit is only as good as its weakest part, so why take chances with anything but the best? Here are supplies that give top notch performance whenever they're used — products that have been designed specifically for telephone application and manufactured by nationally known leaders in their fields. For instance:

"Klein" pliers are "tops" both in quality and performance. Their keen, hand-honed, perfectly matched cutting knives and handles with comfortable spring grip enable workmen to do a better and quicker job.

"Nicopress" tools and sleeves produce splices that have strength equal to or exceeding the rated breaking strength of the conductors themselves.

Monotype "Copperweld" drop wire combines the strength of steel with the rust resisting life of solid copper.

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LINE and DESK

RAY BLAIN, Editor

Q. What types of ladders are considered best for use in equipment rooms of telephone exchanges?

A. We prefer the top fixture type of rolling ladders. These ladders are suspended from a single ceiling track and the bottom is supported on two ball bearing mounted, rubber tired wheels which roll on the floor without a bothersome guiding track. Either a top or bottom automatic brake may be had though the top variety is generally considered best for telephone use. This brake may be applied automatically when a man's weight is placed on it to prevent rolling. Adjustable shelves and seats may be obtained when desired for use with these ladders. Various types of ladders are available and a type may be selected to meet every telephone need.

Q. We have in our system a large number of old poles which we want to cut down and reset. We would be pleased to know whether it will be possible to treat the butts of these poles so as to extend their life before reuse?

A. Yes there is a wood preservative now available which may be used to brush treat the butts of poles to greatly extend their useful life. This preservative is heated and poured or brushed over the butt end of the pole to be treated. An old rain trough or a piece of tin may be used to catch the excess preservative which runs back into a pail to be used again. A second coat may be applied after the first has been absorbed. One gallon of this preservative will ordinarily treat the butts of 5 or 6 25 or 30-foot poles.

Q. When ground wires are placed on poles at regular intervals in a line during construction how should such ground connections be installed?

A. There are various methods whereby this may be accomplished the most commonly used being to staple a ground wire on the pole with a small coil of wire under the butt of the pole. A new arrangement recently placed on the market consists of a round copper plate which is nailed under the butt of the pole and which is provided with a connecting strap which extends above the ground level. The end of this strap is arranged with a clamp for connection of the ground wire. It is claimed that the greater contact area of this arrangement provides ample discharge capacity and a positive ground contact. This fixture also utilizes the weight of the pole and the moisture usually present underneath it which results in a constant compression contact with the earth.

Q. We plan to provide test points where any pair may be opened on a long run of 50-pair cable and would be pleased to know whether a manhole type terminal could be used for this purpose or should it be installed above ground?

A. This terminal could be mounted in a manhole but it would have to be of a weatherproof type. Perhaps your best plan would be to locate these test terminals on concrete pillars above ground. However, with inexpensive and reliable test equipment now available cable trouble can be easily and quickly located and the need of test points in a cable of this size is not believed warranted.

Q. How are screw type earth anchors ordinarily installed

A. A special wrench which is placed over the anchor rod after the eye has been removed. This wrench engages a section provided on the rod near the anchor and is used to turn and guide the rod as the anchor is screwed into the earth. When an anchor of this type is to be installed in hard earth the job can be made easier by digging a hole about 6 inches deep with a shovel for starting. A pilot hole dug with a small auger may be required in some types of soil. When the anchor has reached a proper depth the wrench is removed and the eye screwed back in place.

Q. Is the suspended transmitter and separate headband receiver for use of the operator considered the best arrangement on a small switchboard where the traffic is extremely light?

A. This arrangement is often used on small switchboards where the traffic is light and the wearing of a regulation headset is considered bothersome or when the operator must perform some other work between calls. The suspended transmitter is not considered the best arrangement as the average operator will not talk into it properly at all times to provide good transmission. The combination handset generally proves best on small switchboards of this type. When a suitable hanger is not available to hold the handset when not in use it may be placed on a small rubber sponge located on one end of the key shelf.

Q. When forming switchboard cables how should the spare pair be terminated?

A. This pair should be cut off approximately ½ inch beyond the longest skinner and the end attached to the form in such a manner that it may be easily located if ever required to make repairs.

Q. What color is ordinarily considered desirable for the painting of cable splicers trailer?

A. Any color of good paint may be considered satisfactory, however, a color to match the trucks used in the exchange or company is generally preferable. Some of the larger telephone companies paint all of their trailers a bright red which is supposed to act as a danger signal when left on the job at night. Trailers should also be equipped with night danger lights and suitable red reflectors as an added safety measure.

Q. How should the rods of abandoned anchors be disposed of safely?

A. The latest type of most patent anchors have an arrangement for holding the nut so that the rod may be removed by turning and reused. The older type do not hold the rod so the best plan we know of is to dig down around the rod about two feet and cut it off with a hack saw. The method of bending the rod back and burying it is not recommended as it might become uncovered and cause accidents.

Q. Please advise whether a 16-pin crossarm may be used to advantage on open wire construction?

A. This type of construction may be used though it is not ordinarily considered desirable. A wire separation of about 8-inches on the crossarm is all that can generally be obtained. The weight of this number of wires is extremely heavy and double arms must be used on all corners and on poles where the grade of the wires change abruptedly. The wires must be pulled to exactly the same tension to prevent swinging together. There seems to be no doubt but that the standard 10-pin crossarm best meets all average telephone requirements of open wire construction.

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Mississippi Community To Receive Service

Actual construction of a county-wide telephone system for Clay-county, the first such project ever launched in Mississippi, is under way and workmen are staking out a right-of-way for a 14-mile line from West Point to Siloam to Abbott, G. W. Hardin, in charge of rural development for this section, said here.

Other lines in various sections of the county are to be mapped soon, Hardin stated. More than 30 families have already applied for phones on the Siloam-Abbott line, and construction crews will begin setting poles some time during the week.

As soon as work on this line is well under way, other lines will be developed, Hardin said.

General System Gains 17,994 Stations in 8 Months

A gain of 1,754 company-owned telephones was recorded by the General Telephone Corp. during August, compared with 1,665 stations for the corresponding month of 1939. For the first eight months of this year the increase totaled 17,994 (exclusive of purchases) contrasted with a gain of 15,305 for the same 1939 period.

Fine French for Cutting Line

The value of communications to the Nazi military command was believed to have been illustrated by the very heavy fine of five million francs imposed by the German Army of occupation upon the city of Nantes, France for the cutting of a telephone line used by Nazi officials.

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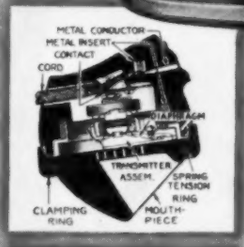
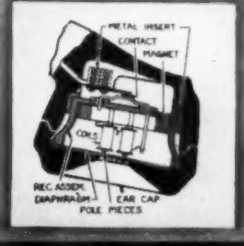
From an operating standpoint, the Stromberg-Carlson No. 1212 Handset is in keeping with its appearance. The special transmitter and receiver permit an unsurpassed clarity of articulation.

It will be easy to prove to yourself that the Stromberg-Carlson No. 1212 Handset is a powerful sales-builder by ordering a sample and testing it.



The patented transmitter used with these Stromberg-Carlson Handsets employs the cone-shaped diaphragm of the radio speaker. It moves as a rigid piston. Maximum flexibility is insured by annular corrugations near the outer edge.



Firm clamping of the diaphragm without excessive tension is insured at all times because the ear cap's thread is entirely independent of the receiver's mounting thread. The result is a quality of reception that pleases subscribers.

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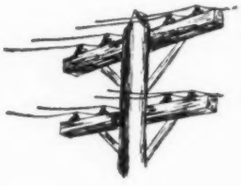
LONG LINES



R. A. Clark, Jr.

Carrier Telephone and Telegraph Systems

This is the second article of a series discussing carrier telephone and telegraph applications. Data is included on line and cable characteristics to permit the calculation of circuit losses at carrier frequencies.

Experience indicates that no difficulty is encountered in the application of carrier to the common type of long distance telephone circuits. There are of course certain obvious limitations to the application of carrier systems, the most important of which is the matter of transmission loss. In the design of carrier equipment there are definite limitations as to the maximum permissable output of the transmitter and the receiver sensitivity. These limitations are due in the main to vacuum tube characteristics and filter design. As a general rule the maximum power output at which the transmitter may be worked is approximately +20 db. The receiver sensitivity is limited to about —20 or 25 db. These represent the outer limits as we have found them. In practice it is well to keep the outbound transmitter level not higher than +15 db. and the receiver sensitivity about —15 db. With these limitations the transmission equivalent between the carrier terminals must not exceed 30 db. at the frequencies employed.

Iron wire has a very high transmission loss at carrier frequencies and is, therefore, not very well suited for carrier operation. However, in some cases the use of carrier over iron wire circuits will prove more economical than replacing the iron with copper, even at the expense of a number of carrier repeaters.

The calculation of circuit equivalents for carrier operation is quite simple knowing the loss per mile at the frequency under consideration. Fig. 1 shows the loss of copper wire circuits commonly used for both wet and dry weather conditions. To determine the total loss on a circuit it is merely necessary to multiply the loss per mile by the length of the circuit. For example, a No. 9 AWG copper circuit (114 mil) 150 miles long would have a loss at 20 kilocycles of 18 db. under dry weather conditions and about 24 db. under wet weather conditions.

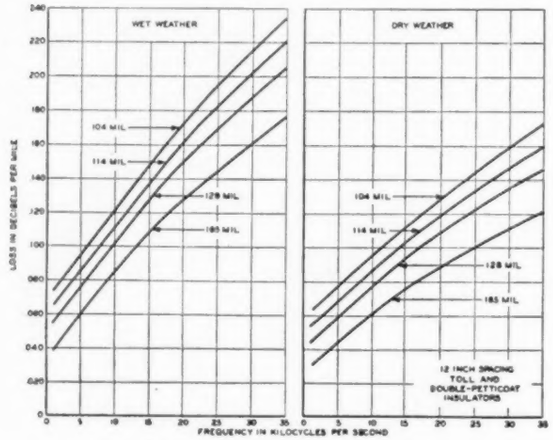
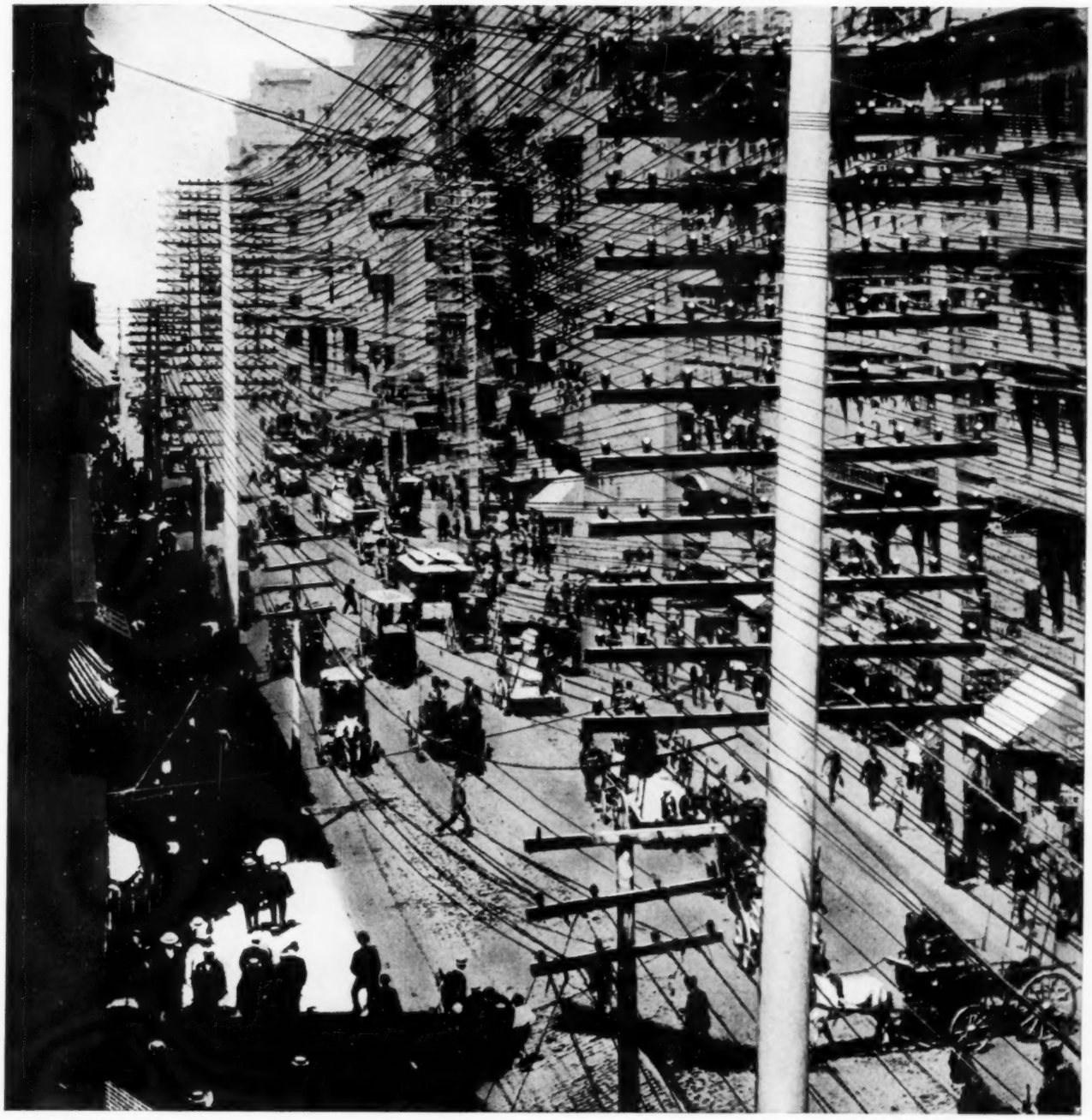


Fig. 1 — Loss of open wire physical circuits under dry weather conditions.

If the circuit contains sections of cable the cable loss must be added to that of the open wire. Fig. 2 shows the loss in non-loaded paper cable. The attenuation of paper cable can be reduced materially by means of loading. However, loading coils must be spaced rather close together (about 1,000 feet or less) which becomes rather expensive for long sections. In such cases the use of an additional carrier repeater may be more economical. The characteristic impedance of nonloading cable at carrier frequencies is in the neighborhood of 150 ohms. The impedance mismatch caused by the presence of short sections of cable in the open wire lines causes an appreciable loss. This can be reduced by the use of impedance matching transformers at the junction of the cable and open wire lines.

Carrier circuits require somewhat more maintenance than physical circuits in order to keep the voice transmission equivalents constant. This is due to the fact that the transmission loss of the open wire line varies over a comparatively wide range during changing weather conditions. For example, in heavy weather such as is occasioned by snow or sleet the transmission equivalent of No. 9 AWG copper will be in the order of 50% higher than during clear weather. Obviously we must design the carrier systems to care for all weather conditions and must therefore have adequate transmission equivalent margins.

The number of times a circuit should be lined up each day depends somewhat on its length. On short circuits that is, not over one repeater point, line ups taken once a day will generally be sufficient unless a wide varia-



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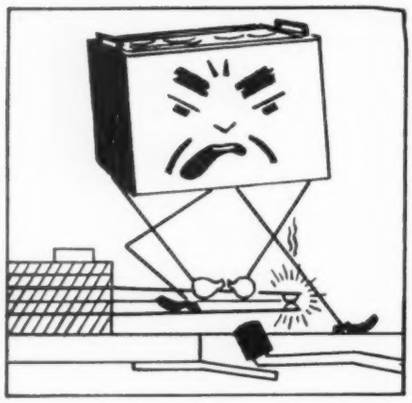

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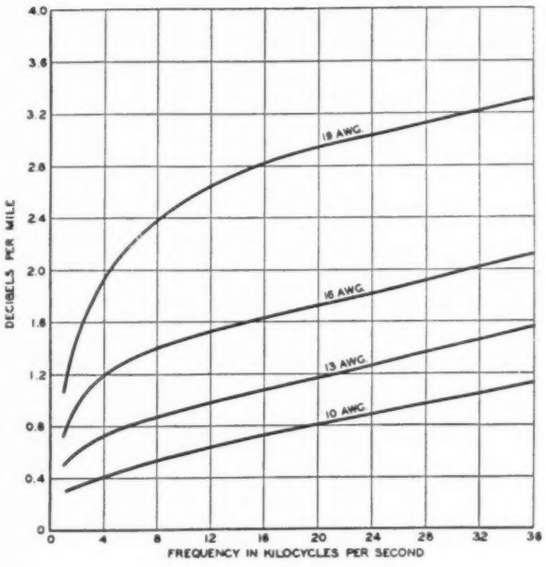
Fig. 2—Loss of non-loaded paper cable.



tion in weather occurs. On long circuits such as involving several repeater points it is well to make line ups two or three times a day. A variation in over-all carrier equivalent of more than 10 db may occur merely from changing temperature. A line up in the morning will generally care for temperature conditions throughout the day and one line up at night will in most cases care for evening weather. Heavy fogs often increase the line equivalent as much as rain or snow. On lines which are subjected to serious fogs it may be necessary to line the circuit up in anticipation of such an occurence. Where automatic volume control equipment is used, line ups can be made at less frequent intervals, however it is good practice to check the circuits at least once a day to see that the equipment is functioning properly.

The vacuum tubes used in the carrier equipment should be given periodic tests. Ordinarily the normal plate current reading of the tube will be sufficient to indicate its life. Readings taken about once a month will show when the filament begins to approach the end of its useful life. With reasonable maintenance carrier circuits will function with a high degree of reliability. There is practically no limit to the distance over which they may be extended and we may look forward to the rapid increase in the use of such type facilities.

There are several factors which enter into the design of carrier systems. These include noise and cross-talk, interference between the carrier and way station telephones and vice versa. In so far as the effect of noise from the carrier on the physical circuit is concerned, proper filter design will take care of this problem. Noise on the carrier circuit may result from a number of causes. Experience indicates that the chief source of noise is arcs and sparks. This may come from motor generator sets or DC motors and telegraph relay contacts. Induction from adjacent power lines apparently has little effect on carrier noise. This is reasonable as we seldom find harmonic frequencies induced from power line parallels greater than the 25th harmonic or 1,500 cycles. The reduction of interference from sparking contacts can generally be taken care of by means of filter condensers and resistors similar to the networks used in preventing radio interference.

Cross-talk is seldom experienced from physical circuits to the carrier or vice versa except where bridged way stations are connected to the line over which the carrier operates. Adequate filtering will prevent cross-talk from the way station to the carrier. Occasionally cross-talk is experienced from the carrier to the way stations; this is generally the result of trouble such as loose connections. Cross-talk between carrier systems must be given careful consideration when two or more carrier systems are operated over the same pole line. In general, special transpositions will not be necessary if proper regard is given to transmission levels and frequency assignments. Here again it may often times be cheaper to install an extra carrier repeater so as to keep the transmission levels from varying over a wide range rather than installing special carrier transpositions to reduce the cross-talk.

The carrier system should be of such design that it may be used over circuits of any length by the addition of carrier repeaters properly spaced. Suitable adjustments should be provided to maintain uniform voice transmission regardless of changes in carrier loss such as occasioned by weather variation. This may be accomplished either manually by meter indications or in an automatic manner. The voice frequency output of the carrier circuit should be equivalent to that of a good telephone; this is about 10 milliwatts. Similarly the carrier transmitter should not overload when connected to a high power subset such as the W. E. Co. Type 501A.

A Short Course in Telephone Transmission

(Continued from page 30)

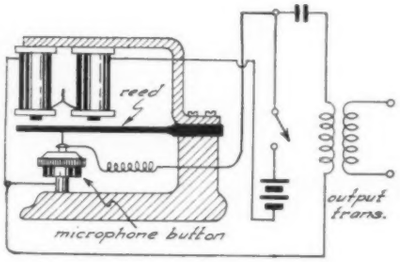


Fig. 6—The tuned reed oscillator.

across a 600 ohm telephone line which is properly terminated in 600 ohms the meter would read (at full scale) approximately 24% low due to the fact that the impedance of the meter is in shunt with the normal terminating impedance of the line resulting in a net impedance lower than normal.

In using a power level indicator or a rectifier type A.C. voltmeter the instrument should be used that the impedance presented by the meter across the measured source is 3 to 4 times the source impedance in which case the resultant error will not be of real consequence, if the meter has several scales a scale should be selected which throws the reading on the lower part of the scale, this will automatically result in a high impedance being presented across the measuring source, inasmuch as in a copper oxide rectifier type meter the internal resistance of the meter is highest when the minimum current is flowing through the meter. Fig. 4 illustrates the effect of meter impedance on accuracy.

Oscillators for Use in Making Attenuation Measurements

AS has previously been explained attenuation measurements are generally made on telephone apparatus and lines at a frequency of 1000 cycles. This frequency gives a representative measurement of the transmission efficiency of the circuit for ordinary telephone talking purposes. There are various types of 1000 cycle sources which are generally referred to as **oscillators** or **tones.** It is essential that the tone source used have a **pure wave form.** That is, the source should not contain prominent harmonics which would tend to give erroneous readings.

The harmonic content of an oscillator can be controlled by the use of output filters or in the inherent design of the oscillator itself. Oscillators are available in both the variable and fixed frequency type. Except in making frequency response measurements on telephone equipment or circuits the variable frequency oscillator is not needed. A 1000 cycle fixed frequency oscillator will serve adequately for ordinary attenuation.

Oscillator Types

THE 1000 cycle oscillators in general use in the telephone field are usually one of the following types. Namely (1) **the magneto inductor type,** (2) the **tuned reed type,** (3) the **vacuum tube type.** Of these several oscillators, the reed type is probably the most widely used, although in recent years the vacuum tube oscillator has become more popular and can now be had at about the same price (or less) than the reed type. The magneto inductor type of oscillator is a very satisfactory and stable type, however, it is more expensive than either the tuned reed or the vacuum tube type. Let us consider the theory of each of the several types of oscillators.

The inductor oscillator consists essentially of a laminated toothed rotor mounted on the shaft of constant speed motor and arranged to rotate between the two pole pieces of either an electro-magnet or a permanent magnet. If an electro-magnet is used it must of course be polarized from a direct current source. The pole piece carries an output winding.

With the rotor revolving at top speed the magnetic reluctances of the air gap path between the two pole pieces varies at a periodic rate. This variation of the magnetic flux in the pole pieces produces an alternating current voltage in the output winding. The frequency of the voltage generated is determined by the speed of the rotor and number of teeth which it contains. This is shown in the following equation.

$$F = RPM / 60 \times \text{No. of teeth}$$

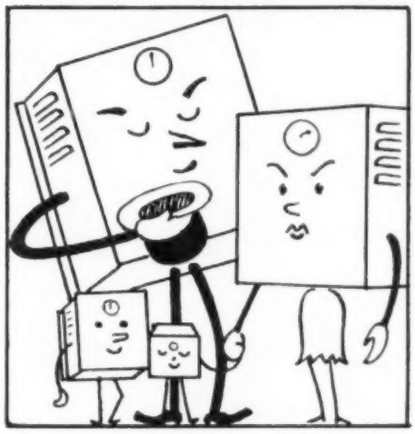
Where: F = frequency in cycles

RPM = revolutions per minute

Figure 5 illustrates the general features of both the electro-magnetic and permanent magnet type of inductor oscillator. A filter is often used in the output of this type of oscillator to reduce the harmonic content which might otherwise be objectionably high.

The Tuned Reed Oscillator

THE **tuned reed oscillator** depends on the principle of a vibrating tuned steel reed mechanically coupled to a granular carbon transmitter button and so arranged that the reed is kept in constant vibration



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Walter S. Gifford, President, American Telephone and Telegraph Company

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5. A source of supply—the Western Electric Company, devoted to telephone manufacture.
6. A great laboratory that brings the advance of science to bear on the improvement of telephony.
7. The financial strength to keep going and work ahead for the future.

* * *

Each is important. All are necessary for good telephone service from day to day and for the needs of national defense.

It is the organization, the team-work, that counts. That means trained, experienced men and management, working together and planning ahead, so that the right material and the right "know how" will be at the right place at the right time.

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THE BELL SYSTEM IS READY TO DO ITS PART IN THE NATION'S PROGRAM OF NATIONAL DEFENSE

See
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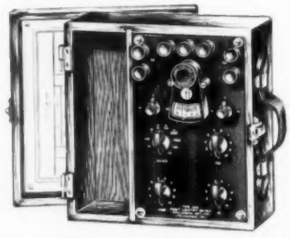

No. 627—Cableman's Bridge for Varley Loop Tests.

No. 695—Current Flow Set for Testing Relays.

No. 614—Telephone Service Meter. A Universal Tester.

No. 691
Tone Generator.

No. 690
Decibel Meter.

No. 355
Attenuation "H" Pad.

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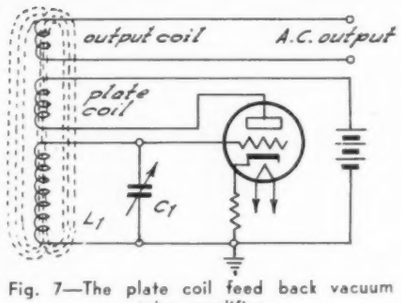


Fig. 7—The plate coil feed back vacuum tube amplifier

by means of an electro magnetic drive coils. The resulting variation of the resistance in a primary circuit in which the carbon button is located generates an A.C. voltage in the output winding of the transformer. This generated A.C. voltage has the same frequency as the period of the reed vibration.

This type of oscillator usually has an exceptionally strong harmonic output hence, a filter is employed in the output circuit to reduce the magnitude of the harmonics with respect to the desired frequency. Tuned reed oscillators have one objectionable characteristic, namely, their operation is not as stable as the magneto inductor type or on a well designed vacuum tube type. Fig 6 illustrates the general features of this type of oscellator.

Vacuum Tube Oscillators

THE rapid development of electronic levices in recent years and a better understanding of vacuum tubes has resulted in the vacuum tube oscillator becoming popular in the electrical field for any type of testing requiring locally generated oscillations. The vacuum tube can be used to generate alternating current at any frequency from a few cycles up to millions of cycles per second.

The basic principle of operation of a vacuum tube oscillator is the feeding back of energy from the plate circuit of a tube into the grid circuit in proper phase relationship, so that the circuit resistance is overcome and a **negative resistance** condition established which permits the tube to continue to oscillate at a period determined by the inductance and capacity in the tuned circuit.

There are various types of vacuum tube oscillator circuits. One of the simplest is that shown in Figure 7. In this arrangement it will be observed that the plate coil is inductively coupled to the grid coil and to the output coil. Plate circuit energy is fed back to the grid coil and thus produces sustained oscillations by the value of the inductance in the grid coil and the capacity across the grid circuit. The higher the capacity or inductance the lower the generated frequency.

One of the typical commercial audio oscillator units that is available to telephone companies utilizes a rather unique circuit as shown in Figure 8. This circuit makes use of two tubes, one as an oscillator, and the other as an amplifier and depends upon coupling in the cathode circuit of the 6-C-6 for the feed back oscillator action. The oscillator tube is operated at low amplitude and the wave is amplified in such manner that the generated frequency has exceptionally good wave form, and the amplifier prevents load changes in the output circuit from affecting the frequency.

General Data on Oscillators

IN using oscillators it is essential that the load impedance which the manufacturer recommends for the oscillator be followed otherwise the output wave of the oscillator may be badly distorted resulting in measurement errors. Most oscillators have the impedance at which

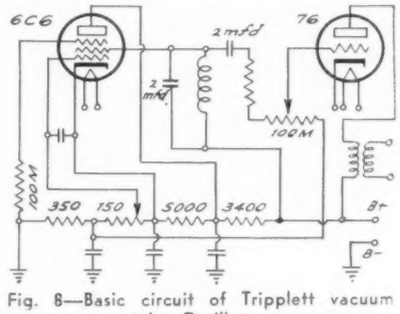


Fig. 8—Basic circuit of Tripplett vacuum tube Oscillator.

they should be used marked directly on their terminals. Some have an ouptut transformer equipped with taps which gives a choice of output impedances.

Also in using an oscillator, particularly where only one meter is available it should be kept in mind that the power output level of the oscillator may change from time to time and therefore in taking straight-away measurements on a telephone circuit, an occasional check should be made of the oscillator output to insure that the output level is the same as being used in the computations.

It should also be kept in mind that if the power level fed into the telephone line from an oscillator is abnormally high that severe cross-talking into adjacent circuits in the same cable or on the same open wire lead will inevitably result, resulting in interference with normal service. This can be avoided by keeping the output level of the oscillator to a value not to exceed .006 to .012 watts.

TO BE CONTINUED

I. T. & T. Station Gain

Telephone operating subsidiaries of the International Telephone and Telegraph Corporation in nine foreign countries report aggregate net gains of 38,233 telephones in service for eight months of 1940 of which 25,226 were gained by companies in Latin America.

Estimating Construction Costs

(Continued from page 32)

The estimating of Construction Costs to cover manholes presents some factors which are best given effect, in the author's opinion, by somewhat different methods. Large special manholes, irregular and temporary types and Central Office cable vaults fal lin the class of units of plant which require especial and individual treatment. In other words it seems to be an impossibility to reduce such construction to an accurate average basis because the conditions under which such underground structures are completed, the dimensions, the materials and the location vary so widely and in such irregular ways. Ordinary street manholes can, and this is subject to marked differences of opinion among engineers, probably be placed on an average basis. A study of the manholes constructed by the company in question will disclose, in most cases, that they fall within a few consistent classes as to the average inside cubic content In all probability, also, the material list for the average manhole of any given inside cubic content may be developed from the standardized manhole specifications.

Eliminating the Central Office cable vaults and other especially large or otherwise irregular manholes, which are preferably treated as individual and separate problems, it is quite possible with care to develop a fictitious imaginary composite manhole in each size and to compute the labor and other components of the total cost so that the composite average may be applied, without sensible error, to all manholes within the limits for inside cubic contents.

This method is somewhat controversial however and in case of doubt it is the wise course to classify the regular street manholes into classes according to type and inside cubic content. The derivation of satisfactory labor relatives is perfectly feasible, however, and is dependent upon the type, brick or concrete or both, the inside cubic content and the average accessibility for construction forces. The number of manholes in any telephone plant is small in comparison with the number of many other units of plant such as poles, for instance, and this simplifies this problem somewhat. Typical labor relatives for manhole construction as developed in one telephone plant are given, for illustration only, below.

New Exchange for Slate Hill, N. Y.

Growth of Slate Hill N. Y. has warranted establishment there of a telephone exchange.

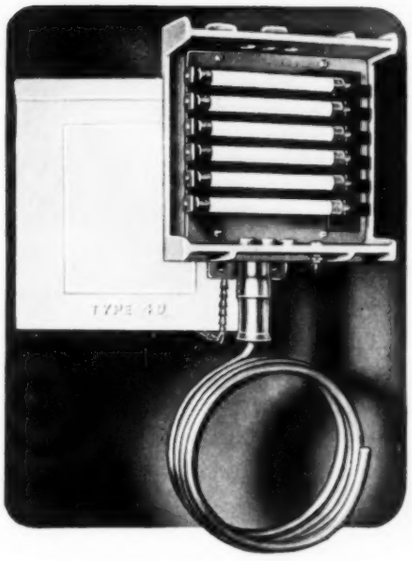
Frank D. Fancher, general manager of the Orange County Telephone Company, announced recently that the firm had purchased a lot at Slate Hill and was arranging to build a telephone exchange to handle the increased telephone business in the community.

Mr. Fancher said, the exchange would be similar to the one in Otisville, with the numbers listed under Middletown. No additional charges would be made, he said, for calls between exchanges at Slate Hill, Otisville, Bloomingburg and Middletown.

Labor Relatives—Composited Manholes

Average Size

Item	Unit	Man Hours
Excavation—Light	Cu. Yd.	2.00
Excavation—Heavy	Cu. Yd.	3.40
Excavation—Rock	Cu. Yd.	6.80
Surplus	Cu. Yd.	1.50
Backfill	Cu. Yd.	0.50
Mixing Mortar	Cu. Yd.	2.00
Mixing and Placing Concrete	Cu. Yd.	3.00
Sheeting and Shoring		
Placing and Bracing	Bd. Ft.	0.03
Removing	Bd. Ft.	0.01
Form Lumber		
Placing and Bracing	Bd. Ft.	0.11
Brick (Mason and Helper)	M	11.60
Reinforcing (Steel)	Lbs.	0.01
Frame and Cover	Each	2.80
Miscellaneous Labor (Added to total)	Manhole	2.00%



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TYPE 40 PROTECTED CABLE TERMINAL

Protection, if you need it, should be complete—the kind you get with the Type 2105 Discharge Block. This block is standard on Type 40 Terminals. It guards unfailingly against all high potentials, because it grounds heavy currents ***automatically***. It ***resets itself*** after discharge, too—a feature that slices welcome dollars off your maintenance budget.

Prove it to yourself. Specify SANDS next time.

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"Snap-Cut" is the world's finest hand pruner. Features easy, clean cutting "V" blade and anvil action. Special catch permits one hand opening or fastening. The ideal cutter for cable up to ¾" diameter. Either lead or cambric covered.
Illustrated above is Seymour Smith hand pruning saw No. 826. It is one of a complete line of fast cutting, accurate saws designed for pruning and clearing.
Seymour Smith long handled pruners are constructed for severe, close work. Several styles available for all clearing and pruning needs.
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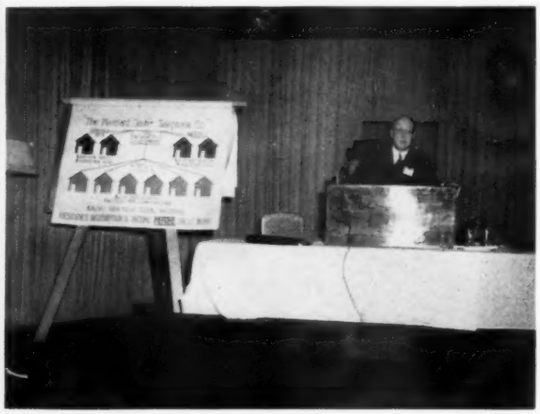
SEYMOUR SMITH & SON, INC.
107 Main St. Oakville, Conn.

USITA Convention In Chicago

(Continued from page 26)



Speakers of known reputation will address you on subjects illustrated for clarity.

year. Few actually realize what a wonderfully efficient organization this association is and the beneficial effect it exerts on the industry as a whole. The planning and the direction of these large conventions is no small task and the officers of the National Association deserve full credit for a job well done.

The majority of the various State Association Officers are also usually in attendance and they, too, contribute no small benefit to the National Convention. These men are all thoroughly familiar with telephone matters in their own state and when they assemble once each year in Chicago their combined information presents a complete picture of the Independent Telephone Industry throughout these United States.

In this short article we have attempted to explain what you may expect to see and hear at the National Convention. The association and manufacturers have arranged these numerous benefits for your pleasure and benefit. Some telephone people may claim that they cannot spare either the time nor money necessary to attend the Chicago meeting in October. In this connection, it is believed that if the worth of the possible benefits to be derived are accurately considered that no Independent Telephone Company in the United States can well afford not to have one or more representative in attendance. The cost is small and it is sincerely believed that you will forever consider the cost of this money well expended and that the useful knowledge gained will pay you dividends for years to come.

AS previously mentioned, the manufacturers have at great expense arranged elaborate exhibits for use at these conventions. Work has been under way for months in many factories on equipment and demonstration sets which will be used at the Convention and days will be required to arrange it is the exhibit rooms at the Stevens Hotel in Chicago. While it is true that the majority of the telephone manufacturers are located in Chicago, others must ship their equipment hundreds of miles so that it will be on hand for this telephone World's Fair. It is believed that these manufacturers are entitled to our appreciation and the very least we can do to partially repay them for their efforts is to visit each and every exhibit and examine them in detail. You will be surprised at the frequency the knowledge so gained will be found useful during the coming years. We hope that you are all planning to attend the National Telephone Convention this year and we will be looking for you at the Stevens Hotel in Chicago, October 15th to 18th, this year of Our Lord 1940.

Among our advertisers exhibiting are:

American Electrical Heater Company, of Detroit, will have a complete line of their American Beauty Electric Soldering Irons, their temperature regulating stand and melting cup, in the rooms of the American Automatic Electric Sales Company.

American Steel & Wire Company Amertel telephone wires and Amerstrand steel strand will be exhibited by the American Steel & Wire Company at the U. S. Independent Telephone Association Convention in Room 2527. A year ago they introduced two new high-tensile wires,—Amertel-85 and Amertel-135. Representatives will be on hand to greet you at the Convention.

The "Corridor Huddle" is not a football term but can aptly describe these telephone men talking it over on the exhibit floor.

Automatic Electric Company's exhibit will feature a complete display of Monophones, including the new Type 43 Compact Monophone as well as models in colored plastic, a typical small Strowger switchboard, and also the latest automatic equipment for larger exchanges. There will also be an interesting historical display based on "50 Years of Progress in Automatic Telephony."

The Bank's Manufacturing Co., 5019 N. Winthrop Ave., Chicago, will exhibit a complete line of sensational two-way loud speaking inter-communication systems and a unique line of instantaneous plating equipment in Room 2551A. Mr. Bank, patent holder and inventor of the original two-way loud speaker systems, Mr. H. H. Jonesi, Mr. J. Wilson, and Miss M. Gawron will be in attendance.

L. M. Berry & Company, Telephone Directory Sales Specialists and Directory Publishers, will display copies of directories which they handle, covering over 3,000 cities and towns in twenty states showing all styles and sizes of directories. They extend a cordial welcome to all telephone people to visit their exhibit rooms 2555-A and 2556-A, at the Stevens Hotel.

Buckeye Telephone & Supply Co., encouraged by the results of their display of rebuilt equipment last year, they are repeating it this year but including some different items. They also intend to display new lines of equipment for which they are distributors and this should add even more to the interest of the display.

During the Telephone Convention the **A. B. Chance Company** will exhibit, in room 2558A Hotel Stevens, their complete line of construction equipment including various types of anchors, cable rings, cable cars, pike poles, hoists, tree trimmers and their anchors installing tools.

Churchill scores again! **Churchill Cabinet Company,** leaders in designing and manufacturing of telephone booths and woodwork for the telephone industry for over 30 years, will show a new booth during the Convention. It's *stream-lined* in appearance and its workmanship and ease of operation is flawless. Churchill invites you to see and use it to make your local calls.

The **Coffing Hoist Company,** Danville, Ill., manufacturers of Coffing Safety-Pull ratchet lever hoists and other Utility Maintenance tools, will again be in attendance at the National Convention. Their exhibit will be in Room 2559 and will be in charge of General Sales Manager Harry N. Hayes and District Sales Manager W. W. Rogers.

Cook Electric Company presents an advanced exhibit of all equipment used in the protection and distribution of telephone circuits. In addition to the well known line of Cook products a number on new items are being presented for approval which all telephone men should find exceedingly interesting.

Copperweld Steel Company will display in room 2540-A several new Copperweld items and a development in line wire that will be of much interest. A new ground testing instrument will also be shown, plus Copperweld line wire, drop wire, ground rods and clamps, guy and messenger strand and cable rings.

W. C. Dillon & Co., Inc., 3551 Sheffield Avenue, Chicago, Ill., will have an exhibit in room 2509-A. The display will include their new line of Dillon Dynamometers; their line of certified malleable iron anchors; their Temperometer for testing temperature of materials, and a new Dynamometer Testing Machine that will take a tension strain up to 30,000 pounds. Mr. Dillon will demonstrate all products.

The Electric Storage Battery Company—Room 2516—will exhibit cells showing the construction of Exide-Chloride, Exide-Ironclad and Exide Tytex batteries used in telephone service. Also, you will see an Exide Charge Control Unit, used for automatically controlling the charge received by a storage battery. In attendance: Messrs. Sauer, Fitts, Campbell, Dunn and Ripley.

General Cable Corporation will demonstrate a Tree Wire Abrasion Machine for testing short lengths of finished drop wire. These actual tests to demonstrate

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Telephone Cable... Paper Insulated and Leaded

ROEBLING makes available a wide variety of electrical wires and cables to meet practically every telephone and telegraph need. In addition to those shown, Roebling makes:—Parallel Telephone Wire ...Rubber Insulated and Braided, Bare Copper and Bronze Wire, Bare Galvanized Steel Wire, Galvanized Steel Strand.

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Telephone Switchboard Cable .... Silk and Cotton Insulated and Leaded

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To make this man's job easier and to get better results - - -

CHANCE CABLE CARS
and (NO-TANGLE PACKED)
CABLE RINGS

Linemen who do cable stringing work like the smooth easy ride, the friction brake, the adjustability and the sturdy, safe construction of Chance Cable Cars.

As for Cable Rings — it's the easy to handle, easy to stock and easy to install Chance (no-tangle packed) cable rings they prefer once they have used them. As for managements view point — the 2000 Pull tests (see photo in circle) made on these rings prove them to be greatly superior because they are less inclined to slip or jump off the messenger. The curved bearing surface too, minimizes cable cutting.

See these Chance Cars, cable rings and construction tools at the convention.

Plan to visit us in room 2558A Hotel Stevens Chicago - during the Telephone Convention

A·B·CHANCE CO. CENTRALIA MISSOURI

wearing qualities of various types of drop wire should be invaluable to telephone people. A complete exhibit of cable and wire will also be shown in their Room No. 2510. You are invited to these demonstrations.

The **Gray Manufacturing Company** will have an exhibit of their line of pay stations in Room 2504-A. This exhibit will be of particular interest to all telephone people as it will give them an opportunity to talk with representatives of the manufacturer of this type of equipment. You are welcome in No. 2504-A.

The **Holtzer-Cabot Electric Company,** manufacturers of ringing and interrupter equipment for telephone exchanges, will have an exhibit in Room 2529-A. They will have on display, in addition to regular equipment, a motor driven interrupter, equipped with a motor that consumes only 9 watts power.

Kellogg Switchboard & Supply Company will have 4-bay Relaymatic switchboard in operation connecting to a manual main exchange and a PBX to demonstrate the complete flexibility of this equipment. The manual main exchange equipment is a Masterbuilt Junior board with universal line circuits and a capacity of 200 lines. Kellogg will also exhibit developments on telephone apparatus and line construction materials.

The James R. Kearney Corporation will have an entirely new and less expensive wire splicing tool with accompanying sleeves and dead-end fittings. Also a new and improved telephone connector for use on both iron and cooper wires as well as several additions to the regular line of anchors and pole line fittings.

Leich Sales Corporation will again occupy the large quarters in which they exhibited last year. Featured will be a 4-position Leich common battery switchboard of streamline design. Leich handsets in colors will also be shown, as will be a representative selection of Leich construction supplies. In attendance will be A. C. Reid, R. W. Siemund, and other executives and field representatives.

Lenz Electric Manufacturing Company will again be in room No. 2517 with a complete exhibit of telephone and switchboard cords, cables, and wires. Mr. Philip C. Lenz, vice president of the company, invites you to come in and chat while you are attending the convention.

Loomis Advertising Company will have on display in room 2552-A some of the directories it sells, including Kansas City, Fort Wayne, and other directories which carry an all-time high in revenue. Interesting charts covering several of these directories showing the company's accomplishments during the last ten years will be exhibited.

Lorain Products Corporation will again exhibit its interesting line of SUB-CYCLE Ringing Converters and auxiliary apparatus in Room 2515-A which will be presided over by Fred J. Heavens, Sales Manager, and C. P. Stocker, Chief Engineer. This concern now has its ringing converters in use in every state of the Union.

National Carbon Company, Inc., Room 2553-A. An attractive exhibit displaying "Eveready" "Columbia" Long Life Telephone dry cell batteries —"Eveready" "Air Cells" for operators' transmitters—"Eveready" Flashlights and Batteries and "Eveready" "Sta-Way" Insect Repellent Lotion. Representatives in attendance—J. J. Burke, W. E. Herr, R. L. Hasbrook and E. F. Schulz. Large, juicy, delicious apples will be presented to delegates visiting the exhibit.

The **National Telephone Supply Company** will exhibit their entire line of electrical specialties for telephone and their telegraph and signal systems. Included will be several new items. Those in attendance will be Mr. S. E. Wright, General Sales Manager, Mr. C. H. Klein, Research Engineer, Mr. S. G. Voyles and W. N. Canada, Sales Representatives.

The North Electric Manufacturing Company featured in the exhibit of this Company, pioneers of "All-Relay" exchanges, will be the new wall telephone, the new North Pushbutton P.B.X. and the new North Self-Regulating Selenium battery charger. These developments are recent additions to the North family of dependable telephone equipment and reflect North advanced engineering and design.

Peatrophone Corporation will introduce an entirely new product in their exhibit in rooms 2560-61A. This product, the "Peatrophone," automatically answers telephones and will be of much interest to all telephone people. There is an article in this issue of TELEPHONE ENGINEER devoted to this new product.

The Raytheon Manufacturing Company of Waltham, Massachusetts, will display in Room 2503-A their justly pop-

Another interesting view of a former Convention exhibit with some of the Kellogg representatives posing with the P. Kerr Higgins.

ular RectiChargR, a line voltage compensated dry disc constant voltage charger, and their RectiFilteR, a dry disc rectifier for telephone applications. In attendance will be G. E. M. Bertram, Plant Manager, R. S. Quimby, Chief Engineer and R. B. Ritter, Chicago Sales Engineer, who will welcome the opportunity of discussing your power problems.

Reliable Electric Company are planning to present their products in the manner that has proven so popular at state conventions during the past year. This system gives a complete visual of the different products. As usual the Rodormers, the Cooks, George Morse and Paul Rhoads will be in attendance to greet old friends.

John A. Roebling's Sons Company will again entertain their friends in Room No. 2530. They invite you to drop in and visit awhile while making the rounds of the exhibits. There you will find your old friend H. O. Cauldwell to greet you and renew acquaintances.

The Schauer Machine Company will display their product, the new Electrox battery eliminator, complete with power-off relay, in room 2530A at the Stevens Hotel. They extend you a cordial invitation to visit their exhibit.

Maurice C. Sellers, who conducts an advertising service company for the Independent Telephone Companies, will be in Room 2561. His service includes newspaper ads, business office posters, bill enclosures, post cards and other advertising materials—and all designed to create good will and new business for the Telephone Companies.

The Shallcross Manufacturing Company will occupy room No. 2528 at the Stevens Hotel and will display a Fault Location Bridge (Wheatstone Bridge), Telephone Service Meter, Telephone Transmission Test Equipment and Current Flow Test Sets.

Stromberg-Carlson will show RELAYDIAL, Central Energy and PBX Switchboards. RELAYDIAL will fulfill all requirements in which dial equipment is needed. See the beautiful streamlined No. 120 and No. 121 Cordless PBX switchboards in attractive colors. For central energy equipment you will see their Super-Service, Junior-Multiple and Non-Multiple switchboards.

The **Suttle** exhibit will show complete line of telephones including Suttlephone, Tablephone, and Crystopac. Display of printed forms for use in telephone office. Also demonstration unit showing model layout for installing underground Twinply Wire with connecting terminals. Ready Wire pay out and take up reel will also be displayed.

The **Telephone Repair Company** will again occupy Room 2538, showing Transmitter Repairs, Rebuilt Telephones and Repair Parts, New Oak Telephone Cabinets and a Coil-winding Exhibit. They will feature the remodeling of Old Style Magneto into Late Style Telephones, and converting Common Battery Phones into Enclosed Gong Sets arranged for dial.

Unique Manufacturing Co., Inc., invites you to stop at Room 2536 and see their complete line of Furnaces, Torches and Splicers' Accessories. Bring your torch and furnace problems along—they can give you the answers! And be sure to get your free chance on one of those little torches which they are giving away.

Franchise at Dows, Iowa

A transaction has been completed between the **Wright and Franklin Telephone company** and the **Dows Telephone company** whereby the Wright and Franklin Telephone company takes over the franchise of the Dows Telephone company and pays all expenses of obtaining the franchise.

Come in!

Room 2561

STEVENS HOTEL

While you are at the convention, come in—let's get acquainted. If we have met before, give me a chance to say "Hello" again.

MAURICE C. SELLERS

An Advertising Service for Telephone Companies

205 W. WACKER DRIVE, CHICAGO

SUTTLE

will be at the same stand – **Room 2555** on the Hall South

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Be Sure to Drop in and Make Yourself at Home

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Suttle Equipment Co.

Lawrenceville - Illinois

TELEPHONE ENGINEER

Announces Its

Now being compiled
To be issued January 15th

1941

TELEPHONE "BLUE BOOK"

OF SUPPLIERS AND MANUFACTURERS SERVING THE VAST TELEPHONE INDUSTRY AS PART OF ITS REGULAR JANUARY, 1941 ISSUE

Goes to EVERY Telephone Co. Buyer in the U. S.

As a Part of Our REGULAR January Issue

1 Complete directory of telephone equipment and supplies with names and addresses of manufacturers and suppliers.

2 Over 7,000 distribution to key factors involved in the design, specification, purchase, installation and operation of all types of equipment and supplies.

3 Manufacturers and suppliers will be listed in three ways — under "PRODUCTS CLASSIFIED"; under "TRADE NAMES" and under "COMPLETE NAMES and ADDRESSES."

4 Names of manufacturers and suppliers with advertising in the January issue will be prominently "spotted" throughout the Buyer's Guide Section with reference to the fact that their advertisements appear in this issue.

5 The January TELEPHONE "BLUE BOOK" issue of TELEPHONE ENGINEER, with its Buyer's Guide, will be kept and used throughout the year by operating men.

TELEPHONE ENGINEER
MANAGEMENT · ENGINEERING · MAINTENANCE

7720 Sheridan Road, CHICAGO

Details Regarding Advertising Are Now Available — Write for Particulars

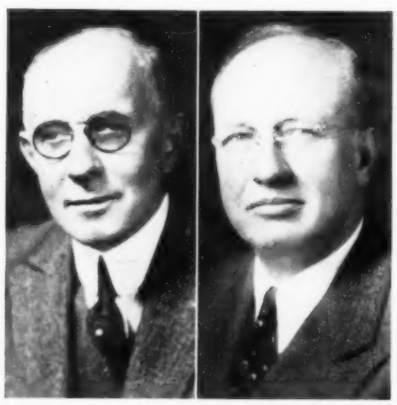
Dr. O. E. Buckley Named By Bell Laboratories

Dr. F. B. Jewett, vice president of the American Telephone and Telegraph Company in Charge of Research, has tendered his resignation as president of the Bell Telephone Laboratories, Inc., to take effect as of October 1, and will become Chairman of the Board of Directors.

Dr. O. E. Buckley, Executive Vice President of the Laboratories, succeeds Dr. Jewett as President.

There is no change in Dr. Jewett's responsibilities for the general program of research in the Bell system, but the change will increase the time he has available in an advisory capacity to the Government as President of the National Academy of Sciences and as a member of The National Defense Research Committee.

Dr. Buckley, the new president, entered the Bell System in 1914, since then he has been intimately associated with telephone research. He became Director of Research in 1933 and executive vice president in 1936.



Dr. F. B. Jewett — Dr. O. E. Buckley

STATION BAROMETER

Due to early press date of this issue, figures on installations for September were not available.

$2.50 FOR NEW IDEAS $2.50

Yes sir! QUIZZICUS will pay for all acceptable ideas that qualify for the feature right under this announcement. YOU have thought of many products—gadgets, etc., so here is your chance to earn a little money for your thoughts. Address your ideas to "Quizzicus," c/o TELEPHONE ENGINEER, 7720 Sheridan Road, Chicago, and if they "make" his feature you get $2.50 for each acceptable idea.

I WONDER WHY SOMEONE DOESN'T INVENT

by Quizzicus

A machine for plowing-in the ground a single conduit in a manner somewhat similar to the present cable plow.

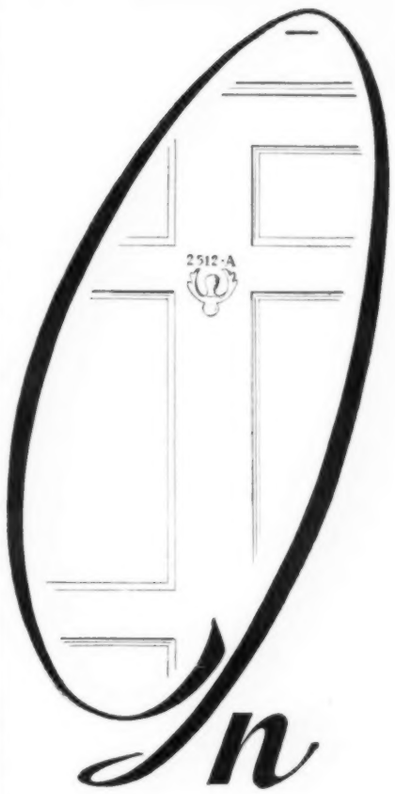
An iron bracket to mount an ordinary insulator, and be simple to install, to replace the old fashioned wood bracket which must be attached to the poles with two large nails.

An aluminum coated window shade for use in the telephone exchange which will deflect rather than absorb the heat rays.

A grade clamp which will prevent aerial cable from slipping and still be trouble free.

Coils sealed in gas pressure containers for use in humid climates.

(Quizzicus is anxious to have YOUR suggestions on products that will make your job easier and improve the telephone art. Address your suggestion to Quizzicus c/o TELEPHONE ENGINEER.)



In

ROOM 2512-A

Stevens Hotel

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. . . you'll find a gathering of the Reliable clan, October 15th, 16th, 17th and 18th. Drop in to see us, or better still, make our room your headquarters for the duration of the convention.

Reliable ELECTRIC COMPANY
OVER 30 YEARS SERVICE TO THE UTILITIES
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ELECTRIC SOLDERING IRONS

"American Beauty" electric soldering irons embody those features that forty-five years of specialized experience have demonstrated to be desirable for efficient and lasting service. That is why they are preferred by those who measure the value of a tool or mechanical device by the service it renders.

"American Beauty"

TEMPERATURE REGULATING STAND

A thermostatically controlled device for regulating the temperature of the soldering iron when not in use. Iron when placed in stand is maintained ready for instant use. Thermostat is adjustable.

For further information or descriptive literature, write

AMERICAN ELECTRICAL HEATER COMPANY

DETROIT, MICH., U.S.A.

Text of Executive Order on Defense Communications Board

"EXECUTIVE ORDER—CREATING THE DEFENSE COMMUNICATIONS BOARD AND DEFINING ITS FUNCTIONS AND DUTIES

"WHEREAS coordinated planning for the most efficient control and use of radio, wire, and cable communication facilities under jurisdiction of the United States in time of national emergencies involves the consideration of the needs for cummunication of the armed forces of the United States, of other government agencies, of industry, and of other civilian activities; and

"WHEREAS such planning must be accomplished as a matter of preparation for national defense; and

"WHEREAS the interest of national defense in the matter of control and use of communication facilities during any war in which the United States may become a belligerent is deemed paramount:

"NOW, THEREFORE, by virtue of the authority vested in me as President of the United States, and by the Communications Act of 1934 (48 Stat. 1064), as amended, it is ordered as follows:

"1. There is hereby created the 'Defense Communications Board,' hereinafter called the Board, consisting of the Chairman, Federal Communications Commission, the Chief Signal Officer of the Army, the Director of Naval Communications, the Assistant Secretary of State in charge of the Division on International Communications, and the Assistant Secretary of the Treasury in charge of the Coast Guard.

"2. The functions of the Board shall be, with the requirements of national defense as a primary consideration, to determine, coordinate, and prepare plans for the national defense, which plans will enunciate for and during any national emergency—

"a. The needs of the armed forces of the United States, of other governmental agencies, of industry, and of other civilian activities for radio, wire, and cable communication facilities of all kinds.

"b. The allocation of such portions of governmental and non-governmental radio, wire, and cable facilities as may be required to meet the needs of the armed forces due consideration being given to the needs of other governmental agencies of industry, and of other civilian activities.

"c. The measures of control, the agencies to exercise this control, and the principles under which such control will be exercised over non-military communications to meet defense requirements.

"3. The Chairman of the Federal Communications Commission shall be the Chairman of the Board. In the absence of the designated Chairman, the temporary chairmanship shall devolve upon the remaining members of the Board in the following order:

"1. The Chief Signal Officer of the Army or the Director of Naval Comnications, whichever may be junior in rank.

"2. The Chief Signal Officer of the Army or the Director of Naval Communications, whichever may be junior in rank.

"3. The Assistant Secretary of State in charge of the Division of International Communications.

"4. The Assistant Secretary of the Treasury in Charge of the Coast Guard.

"In the absence of any regularly designated member, the agency which he represents may be represented by an alternate from that agency, designated by the head thereof, but such alternate shall not serve as Chairman: The Assistant Secretary of the Treasury in Charge of the Coast Guard is designated as the Secretary of the Board.

"4. The Board shall take no cognizance of matters pertaining to censorship. The Board shall study the physical aspects of domestic standard broadcasting and shall recommend such precautions, supplementary, facilities and reallocations as it shall deem desirable under foreseeable military conditions. It shall also make plans for the speedy and efficatious use of all necessary facilities in time of military emergency.

"5. The Board shall appoint such committees as may be necessary to carry out its functions and to provide for continuing studies and for contact with other government agencies and with the civil communication industry.

"6. Except as otherwise instructed by the Board, committees appointed thereby shall have no power to make final disposition of any matter presented to them by the Board for study, but they shall express by written report their findings and recommendations. Minority reports may be submitted if deemed of sufficient importance to warrant further consideration by the Board.

"7. The Board and the committees shall call for consultation such representatives of other government agencies and of the civilian communication industry as may be deemed advisable in obtaining full knowledge of the situation being studied, to the end that the needs of all may be considered and provided for in so far as the situation permits. Other governmental agencies are directed to cooperate in providing assistance required by the Board in its studies.

"8. During any war in which the United States is a belligerent, or any national emergency, the existing Interdepartment Radio Advisory Committee shall act as a Committee of the Board, but only in an advisory capacity. While the Interdepartment Radio Advisory Committee is so acting as an advisory committee, all of its reports, recommendations, or communications normally prepared for submission to the President shall instead be submitted to the Board, for consideration from the standpoint of national defense and for disposition.

"9. Reports containing the findings and recommendations of the Board shall be submitted to the President for final action through one of his administrative assistants.

FRANKLIN D. ROOSEVELT"

On The News Front

(Continued from page 28)

telephone circuits on power lines and plans another test, but despite some reports, there is no scheme for the promotion of rural telephone service under REA projects at the present time. In fact, the tests have not been successful in carrying voice signals satisfactorily over power lines to a large number of point and have only been feasible on a point-to-point basis such as has been done for a number of years by the electric utilities themselves. There is no plan under way to institute rural telephone service in REA projects in any section of the country, it has been authoritatively stated by REA officials.

One report about such REA rural telephone service being promised which was voiced by a Georgia Representative was declared to be without official foundation. The REA officials also indicated the view that they would probably want to work with the Bell System and Independent industry if and when their experiments should ever become successful. It was cited that the use of carrier current systems for telephone service on power lines likewise might involve patent problems because of inventions held by the Bell System and Independent manufacturing companies.

▲

Southwestern Bell and State Commissioners' Association Protest FCC Order To Place Interstate Rates in Exchange Areas Under Federal Authority

THAT under the provisions of the Communications Act, the FCC is prohibited specifically from assuming regulatory jurisdiction over interstate telephone rates between points in a local exchange area was stressed before the Commission in a recent oral argument by a Southwestern Bell attorney and the general solicitor of the National Association of Railroad and Utilities Commissioners on the ground that such jurisdiction would usurp the powers of state commissions. However, FCC Chairman James Lawrence Fly raised the question that state commissions did not perform actual or practical regulation of such interstate rates in local exchange areas and did

"LONG DISTANCE"

Whether you require new facilities or need to improve your present plant we shall be glad to assist.

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Carrier Telephone Equipment
Carrier Telegraph Equipment
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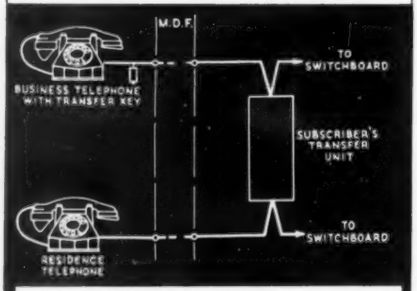
No More

LOST CALLS

With The

SUBSCRIBER'S TRANSFER SERVICE



Doctors, lawyers, and salesmen can't afford to lose telephone calls. With the Subscriber's Transfer Service they don't have to. When the subscriber is away from his office, all calls go automatically to his residence. He needs only to flick a key as he walks out the office door.

Easy To Install

Installation is almost as easy as operation. A switching key goes in the subscriber's office, and a simple transfer unit connects the residence and business lines at the central office.

Everyone Profits

Everyone benefits from this service. It cuts down on unanswered calls, makes duplicate directory listings unnecessary, and produces extra revenue for operating companies. Start selling Subscriber's Transfer Service today. Write for details.

AUTOMATIC ELECTRIC

AL CP

TELEPHONE, SIGNALING, AND COMMUNICATION APPARATUS

Distributors in U. S. and Possessions:
AMERICAN AUTOMATIC ELECTRIC SALES COMPANY
1033 West Van Buren Street, Chicago, U.S.A.

not have the machinery to supervise this class of service so the FCC was the proper agency.

The issue arose in connection with interzone interstate telephone rates between outlying sections of the Kansas City exchange district which embraces the two Kansas Cities in Kansas and Missouri and their surrounding suburbs and communities.

The FCC in a proposed report and findings has held that interstate rates are subject to its authority and tariffs covering these charges should be filed with the Federal Commission. This issue is important to both the Bell System and the Independent Industry as throughout the country it is felt there are many present and prospective communities located in two states which on the basis of population and service have been or can be placed within an exchange district. E. W. Clausen, Southwestern Bell counsel, told the FCC that there were seventeen towns or cities along the Missouri and Kansas boundaries alone with their respective exchange areas located in both states.

The Southwestern Bell pointed out that this expansion of exchange areas was a normal process of telephone operations when communities grew in size and in more closely knit interests, and this proposal of the FCC to assume jurisdiction would block or hamper this extension of telephone service. The Southwestern Bell counsel contended that state commissions had regulated this type of interstate service for years in a satisfactory manner and argued that the telephone company in order to conduct its business had to know definitely which agency should regulate its service. The Kansas Corporation Commission has opposed the FCC proposed report and general solicitor Benton of the National Association in the oral argument presented the view point of state commissions, stressing that the Communications Act plainly banned the assumption of such interstate rates and left this class of service to the state commissions.

FCC Approves $7,635,000 All-Weather, Omaha-Denver Toll Cable Link, Placed Underground

IN ORDER to relieve prospective traffic congestion in the transcontinental toll telephone service and to meet any extraordinary national defense requirements, the American Telephone and Telegraph Co. and the Northwestern Bell Telephone Co. are installing twin all-weather toll cables, entirely underground, for the 660-mile distance between Omaha and Denver to form a new link in the nation-wide toll system. The FCC has recently approved this construction which with its estimated cost of $7,635,000 was the largest telephone project to be sanctioned by the Commission and which is to be commenced at once with completion planned around the end of next year.

The new twin all-weather cables are to be placed underground or "plowed in" for the entire distance. This will protect the service against storms and is a highly important feature of the project as open wire facilities in this long distance link have been frequently sub-

"THIS MODEL DOES AWAY WITH THAT NOISY BELL."

144 IDEAS

For Building Sales at Less than 7c each

Much can be said of any sales service—but here is one that is built from practical field work—EVERY IDEA A PROVEN TESTED IDEA BY LONG EXPERIENCED MEN. Many of these ideas were developed in the telephone industry.

This IDEA BOOK is classified into three general divisions, (1) sales and product analysis, (2) sales education and (3) sales presentation.

PRINTERS INK WEEKLY RECENTLY COMMENTED UPON THIS BOOK BY SAYING, - -

"A book that is worth investigating by anyone seeking ways and means of helping salesmen operate more efficiently".

TELEPHONE ENGINEER STATES, - -

"To miss this book is missing a real opportunity of getting high priced ideas for little or nothing".

One of the co-authors of the book is Atwell Jackson, Sales Consultant to Telephone Engineer.

SUGGESTIONS AS TO CONTENTS

4 Complete Sales Contests.

20 Sales Meeting Ideas

18 Sales Management Ideas

4 Showmanship Suggestions

TYPICAL SELLING PRESENTATION

Several pages of pointed paragraphs for leads in writing sales letters, direct mail, etc.

A DESK BOOK THAT IS BEING USED BY HUNDREDS OF TOP BRACKET COMPANIES AS WELL AS MANY SMALL CONCERNS.

Any idea in this book is worth more than its total price.

PRICE $10.00

The price of this volume is $10 with a special offer of 10% off, CASH WITH ORDER.

Personal Demonstration will be gladly made during Convention by calling HYDE PARK 6536.

ANTHONY ATWELL
AND ASSOCIATES

1369 E. 57TH ST. CHICAGO, ILL.

CASH DISCOUNT COUPON

ANTHONY ATWELL & ASSOCIATES
1369 E. 57th St., Chicago

Kindly send us copy of STEP BY STEP IN EFFECTIVE SALES PROMOTION at $10 less 10% for which we enclose our check for $9.00.

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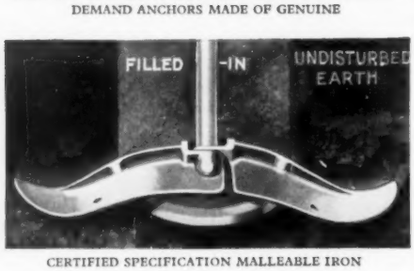
City and State .....

Reduce Costly Risks of Guying Failures with KEARNEY 2-WAY EXPANSION ANCHORS

FAILURE of ordinary anchors to hold under particular ground conditions were causing guying failures — interruptions — costly repairs . . . Then, Kearney Engineers were asked to make recommendations. Kearney 2-Way Expansion Anchors met all test requirements — were first choice among all anchors tested . . . Today, thousands of anchors are being used . . . no "pull-outs", no costly risks of guying failures. But see for yourself how these specially designed anchors have blades that expand 2½ times their rated size and have 63 per cent of their blade area in solid, undisturbed earth . . . to give you maximum holding power — minimum risk of guying failures.

Ask About A Trial Order

DEMAND ANCHORS MADE OF GENUINE



CERTIFIED SPECIFICATION MALLEABLE IRON

JAMES R. KEARNEY CORPORATION ST LOUIS, MO.

DISTRIBUTED THROUGH JOBBERS

TELEPHONE ACCESSORIES

ject to ice accumulations which have resulted in 19 serious interruptions during the past twelve years. Using a recent development of the Bell System, the twin cables are to be plowed underground simultaneously except in metropolitan areas where they will be placed in conduits. The cable route will pass through Cheyenne and it is understood that plans are being made for the extension of the same type of twin all-weather cables from Cheyenne to Salt Lake City and then later to the Pacific Coast. This cable construction is another step of the A. T. & T. to place its entire long distance system in cable and underground wherever feasible throughout the nation.

A large number of type K carrier systems will be installed in the Omaha-Denver link whenever the need for this increased capacity arises. It is estimated that the present 151 A. T. & T. and 155 Northwestern Bell circuits on the basis of growing traffic should be increased next year to 189 and 168 circuits, respectively; in 1942 to 201 and 181 circuits respectively; and in 1945 to 240 and 202 circuits.

Ohio Independents Discuss National Defense

THE Ohio Independent Telephone Association semi-annual district meeting was held at Elyria, Ohio, September 24, attracting an attendance of 112 members chiefly interested in the consideration of steps being taken by Buckeye Independents in connection with national defense and the problems arising out of the national situation.

The meeting was opened with a luncheon served at the First Congregational Church. H. O. Dutter, general manager of the Elyria Telephone Company, had charge of the local arrangements and delivered the address of welcome.

Reports were made by Association president, J. Warren Safford of Troy and secretary-treasurer, Frank L. McKinney. Discussions were then opened and conducted by past-presidents; Gustav Hirsch, Columbus; Wm. C. Henry, Bellevue; Herman C. Hageman, Lorain; and C. L. Jones of Athens, Ohio.

The following excerpts from Mr. Safford's address will be on interest to all Independent telephone men:

"By reason of changes taking place in the balance of the world power, thousands of miles away, our own country is changing from normal operation under a normal form of government, to a military economy, with all of the drastic and extraordinary demands that the latter implies. History is again being written with the sword instead of with the pen, and the United States, (whether it becomes a combatant or remains an interested observer) will for years to come, be a madhouse — of production for military requirements—of training and education of men and women along specialized lines—of organization for defense and if necessary for offense.

"Under these circumstances the communications networks of the country become so vital, that it is difficult for

J. Warren Safford

me to find words with which to truthfully and completely picture the importance of your job and my job, to every man, woman and child in the country. Your service is no longer a mere "utility." It has become a national necessity, second in importance only to the continued existance of our military establishment.

"With these things in mind, it is obvious that all of us must take stock of our present position and condition—that we must adopt a comprehensive program for our companies that will enable us to look ahead clearly, and to act quickly and decisively, as changing circumstances dictate.

"I have compiled a list of some of the things that are necessary to such a program. They are:

1. Analysis of company properties so that the management will know exactly what existing facilities are available, and what additional load can be carried:

(a) Without changes or additions.

(b) With minor changes and addi-

tions, but without adding equipment or outside plant.

(c) With major changes and additions to present equipment.

2. Study of company's properties from the standpoint of possible sabotage or other damage, and providing adequate protection wherever weakness appears.

3. Study of company's personel to establish the effect thereon of military measures including conscription, and possible citizenship legislation.

4. Study of company rates, income, and financial position. Companies already in trouble in these particulars, are in no shape to extend cooperation to the government in any emergency.

5. A survey of possible service demands in each area:

(a) Arising from increased production activities by present industrial and manufacturing plants served, or through the extension of military establishments now located within the area.

(b) Arising because of the establishment in your territory of new industrial or manufacturing units, or the placement there in of new military bases or facilities.

6. Formulation of a clear cut plan for the procurement of everything that will be needed by your exchanges in order to maintain present operations, or to meet the new requirements that are certain to arise in many cases.

7. Determination of the manner in which emergency facilities will be installed, financed, amortized—and paid for.

8. Compilation in each area, of a directory of experienced telephone workers, in all departments, who can be called upon or required to perform valuable emergency services.

9. Development of a program for special cooperation between company management, employees and stockholders in the interest of the national defense and the telephone industry.

10. Confidential tabulation by every company, for release only to the Federal Government, or to the associations representing the Independent Telephone industry, of full and complete information showing the dependence upon your facilities and services, by local, county, state and Federal governments; by war industries; by other industries essential to civilian existance; by vital public utilities; by agriculture; by processing, distributive and marketing agencies; and by hundreds of others equally as important in the winning of a war, or the maintaining of a great nation in peace time.

"These are only some of the things that you must know about your companies during times like these. I hope that in the course of this meeting today that other voices will be joined to mine, in emphasizing the importance of searching investigation, right now, into plant and corporate weaknesses, so that remedies can be applied in advance of any developments that may reflect upon our management of our industry, or in any manner handicap the free functioning, under private ownership and operation, of our independent telephone exchanges."

Obituary

Charles Crapo, 62, building and equipment engineer of the Mountain States Telephone and Telegraph Company, died September 2 in Denver, Colorado. Last June he completed 50 years of service in the Bell system and during this time he invented several devices and methods of switchboard wiring that are still in use as standard throughout the entire Bell system.

David Franklin Houston, former vice president of the American Telephone & Telegraph Company and President of the Bell Telephone Securities Company, died September 2 in a New York Hospital. He was former Secretary of Agriculture and the Treasury under President Woodrow Wilson. At the time of his death he was Chairman of the Mutual Life Insurance Company and a director of the American Telephone & Telegraph Company.

R. L. Parker, 64, former Manager Geneseo, (Ill.) Cooperative Tele. Co.,

Be sure to visit the

UNIQUE

CONVENTION EXHIBIT—ROOM 2536

• • •

See these better tools for Splicers and Linemen

- **BLOW TORCHES**
- **FOLDING SAFETY SHIELDS**
- **SPLICER'S FURNACES**
- **VENTILATED BALANCED LADLES**
- **WIPING CLOTHS—ALL TYPES**
- **SOLDER COPPER HANDLES**
- **POLE BLEEDING TORCHES**

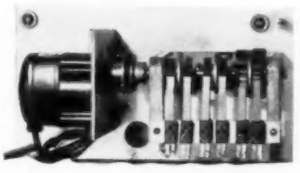
Get your FREE CHANCE on this personal tool-kit Torch to be given away just before the banquet.

ASK FOR New Pocket Size BULLETIN No. 40 Shows complete line of UNIQUE equipment for the telephone field.

UNIQUE MANUFACTURING CO., INC.
221 W. Walton St. — Chicago, Ill.

SEE OUR EXHIBIT IN ROOM 2529-A AT THE CONVENTION

A NEW MOTOR DRIVEN INTERRUPTER



LOW POWER CONSUMPTION of 9 WATTS
NO BRUSHES or SLIP RINGS
110 VOLT, 60 CYCLE MOTOR DRIVE for COMMERCIAL POWER
80 VOLT, 20 CYCLE MOTOR DRIVE for RINGING POWER
A PRECISION INTERRUPTER for TELEPHONE EXCHANGES

Write for Bulletin 1310-02

THE HOLTZER-CABOT ELECTRIC CO.

125 Amory St. BOSTON, MASS. *Motor Specialists* **6161 So. State St. CHICAGO, ILL.**

HERE'S A TYPICAL EXAMPLE
On your lines this L-M Steel House Bracket will give you a typical example of the long service life you can expect of all L-M Telephone Construction specialties. Its fine, high-strength steel body is thoroughly galvanized. Its glazed porcelain insulators meet the industry's most exacting standards. Make a note now to try this L-M House Bracket . . and to get the full facts on the complete line of L-M Pole Line Hardware and L-M Telephone Construction Specialties.
LINE MATERIAL CO.
REPRESENTED BY
AMERICAN AUTOMATIC ELECTRIC SALES CO.

died September 20 at his home in Geneseo following a long illness. The interment was in Iowa, his native state.

Born in Gilman, Iowa, Mr. Parker received his formal education there and at Grinnell College. His learning did not stop there, however. . .throughout his entire life, Mr. Parker was extraordinarily progressive in his chosen field and could always be depended upon to take an active part in the growth and betterment of the telephone industry.

His start in the field came in 1900 when he arranged for a group of farmers around Brooklyn and Malcolm, Iowa to secure telephone service. The next step was in 2 years when he bought the Gladbrook, Iowa exchange. Later he served as manager of the Four City Telephone Co. at Prairie, Iowa, which position he resigned to join the Alberta Government Telephone System in Canada. From 1911, when he returned to Iowa, until 1928 he served as manager of several companies; Mutual Telephone Company of Traer, Iowa Continental Telephone Co., Corn Belt Telephone Co. of Illinois at Bloomington and the Geneseo Cooperative Telephone Co.

Mr. Parker was a director of the Illinois Telephone Association during the years 1932-1933 and a past President of the Iowa Independent Telephone Association. He was a member of the Independent Pioneer Telephone Association.

He is survived by his widow, two daughters and one son, who is the present manager at Geneseo. His many friends in the telephone industry and entire Independent field are saddened by his passing.

Mississippi Properties Are Sold

Jackson, Miss.—Sale of Smith county (Miss.) properties formerly owned by the Magnolia Telephone Company was approved in chancery court recently by Judge V. J. Stricker, the title to the property being conveyed to Senator Evon Ford of Taylorsville as trustee for a Smith county group.

Senator Ford paid $500 for the properties and agreed to pay another $500 at the end of the year or either deliver the property back to the court.

The sale involves exchanges at Taylorsville, Mize and Raleigh, and toll lines from Taylorsville to Laurel and Raleigh.

Formal approval by the public service commission is necessary before the sale is complete. The commission will meet again the first Monday in October.

The public service commission forfeited the charter of the telephone company at a hearing on August 16, and last fortnight approved sale of the properties in other sections.

The commission reserves jurisdiction in the transfers in order to assure improvements in facilities at the various exchanges, and it announced that the general public may file complaints if the services are not improved.

Alexander Graham Bell Stamp To Go on Sale

United States postage stamps, honoring Alexander Graham Bell, inventor of the telephone, will be placed on sale at the post office at Boston, Mass., on October 28. The first stamp purchased will be presented to Alexander Graham Bell Grosvenor, eldest great-grandson of the inventor, on that date probably by a leading figure in the telephone industry.

The Bell stamp is of 10-cent denomination, printed in sepia. It is one of five in the Inventors series, and another in the series is Morse, inventor of the telegraph.

Because of the special interest in the Bell stamp among Bell System philatelists, the Bell Telephone Stamp Club of New England has prepared a cachet for first-day covers, and will make these available, with stamps, to interested employees throughout the System. The Club will provide a specially printed 6¾-size envelope, address it, and apply one of the Bell stamps for mailing on October 28. The Boston post office will apply a special cancellation reading "First Day of Issue," since Boston is the only city in the country where the Bell stamps will be on sale on that date. Inside the envelope will be a leaflet giving a brief account of the life of Alexander Graham Bell. Requests for the Bell stamp and special envelope should include 15 cents for each cover and should be addressed to E. S. Bacon, Room 406, 119 Milk Street, Boston, Mass., and should reach him not later than October 15.

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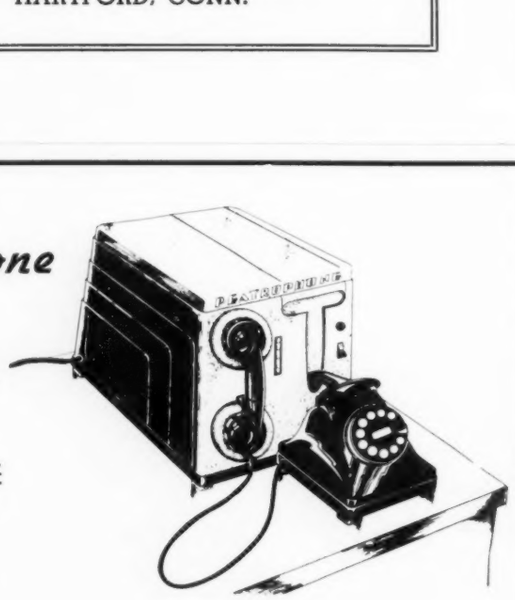

The Peatrophone answers the telephone; delivers a message; and records any message the calling party cares to leave.

Ready for distribution soon.

LEASE these to your Subscribers and make money

No connections to the telephone circuit and no change in operation.

PEATROPHONE CORPORATION

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Home of the Famous "Sumter" Telephone

Noted Humorist to Address Pioneers

Telephone men will have an opportunity to determine whether they are worth their weight in laughter when William Dern, foremost American humorist, speaks at the meeting of the Independent Pioneer Telephone Association. Mr. Dern, whose subject will be "Dividends of Laughter," is especially gifted in that along with keeping his audience in a continual uproar by his witty stories and clever remarks, he drives home sound philosophy and common sense ideas. His audiences have acclaimed him a man of exceptional ability and charm and often engage him to appear before them year after year. He will address The Pioneers at 10:30, Wednesday, Oct. 16, in the Tower Room of the Hotel Stevens, Chicago.

Smart Named By Association

The National Association of Railroad and Utilities Commission has formally accepted the resignation of Robert E. May, now associated with Carl I. Wheat, former FCC special telephone counsel, from the Assistant Secretaryship. Benjamin H. B. Smart who has been with the association since 1934 was appointed to the post.

New Monophone Offers Mounting Flexibility

A VERSATILE new telephone instrument, the Type 43 Compact Monophone, has been added to Automatic Telephone Company's family of modern telephones.

In a descriptive circular, the manufacturer points out that operating companies will "find all sorts of uses for this new compact Monophone." Those who have seen the new instrument agree. While it will be used largely as an extension telephone, it may also be connected to a bell box for use as a main line instrument.

Because of its compactness, the Type 43 has unusual flexibility in application. The side of a desk is likely to be an especially favored mounting position, because when so mounted the telephone is ready at hand and yet out of the way; and, in the case of the automatic model, the dial projects conveniently

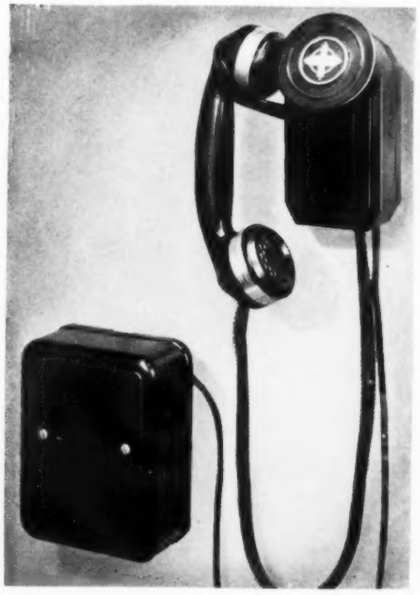
above the desk surface. The Type 43 may also be mounted on a wall or column, either directly or at right angles to the mounting surface. A special angle mounting bracket is available for the latter application, thus permitting handy mounting on the side of a cabinet or row of shelves where space is at a premium.

The case of the telephone is of die-cast zinc, measures 3" by 3" by 7", and contains an induction coil, condensers, terminal strip, wiring and hookswitch. Knockout mounting holes are provided on both the baseplate and the cover. Three knockouts in the baseplate are used for wall mounting. For desk mounting, three pairs of knockouts are provided in the cover, at three different levels. Any pair of these holes may be "knocked out" to mount the instrument at the desired height above the top of the desk.

Both the handset and circuit are the same as those which have proved so successful on the Type 40 and Type 50 Monophones. The "all positions" transmitter provides transmission of remarkable uniformity over the entire range of voice volumes and frequencies in ordinary speech. Ample volume is delivered from a carbon cell having low resistance, low carbon noise, and long life.

The "damped diaghram" receiver similarly provides reproduction of almost unvarying volume and high fidelity, with low apparent sidetone. This uniformity of reproduction improves reception over circuits of high attenuation (in which the response through previous types of receivers is sharply reduced at high frequencies).

The Type 43 Compact Monophone is available with dial for automatic service or with replacable dial blank for manual service. As an extension telephone, it requires only two wires to the main-line station with which it is associated. When it is used as a main-line telephone, a three conductor cord connects it to a special compact ringer box, on which the telephone line is terminated. An Extensicord (see illustrations) is standard equipment on all models.



These illustrations show three typical applications of the Type 43 Compact Monophone. Left: showing the Type 43 as a wall telephone complete with bell box. Right: here it serves as a desk-side telephone, handy but out of the way. Top Right: this reveals the advantages of the special mounting bracket, which places the telephone conveniently at right angles to the end board of a row of shelves. The Extensicord shown is standard on all Type 43 Monophones.

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Peatrophone To Be Shown at National Convention

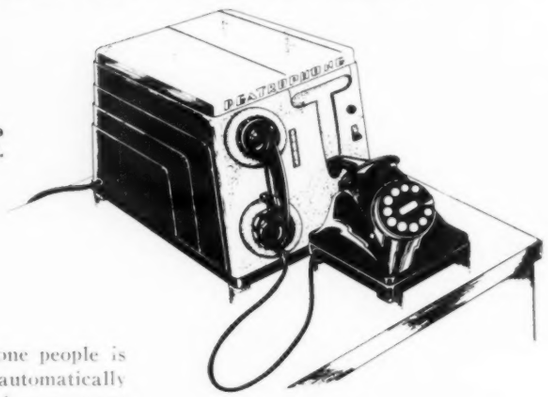


Fig. 1 — The Peatrophone as used with ordinary C.B. Hand set.

Of interest to all telephone people is the new device that will automatically answer the telephone, speak a message to the calling party and record any message the calling party cares to leave. It is called the PEATROPHONE, and will be shown at the convention of the U. S. Independent Telephone Ass'n in Chicago, on Oct. 15, 16, 17 and 18.

The Peatrophone is of the greatest value to those who must have their telephone unattended but desire to leave word where they can be reached or record all incoming messages during their absence. In some of the larger cities this situation is taken care of by the "Message Service" offered by the telephone company for an hourly charge. This requires special facilities and equipment at the central office and is not practical for small and medium-size exchanges.

Its size is about the same as a typewriter as you can see from the accompanying picture. It can make an answering service available in exchanges of any size without any special facilities at the central office and without changes in operating procedure.

The idea of the Peatrophone originated with Mary W. Peatross of Sumter, S. C., which was for many years the home of one of the largest telephone manufacturing companies in the world and the only telephone manufacturing company south of the Mason and Dixon Line. Readers of Telephone Engineer doubtless remember Sumter Apparatus and the famous 'Unitype" switchboard with its pull-out drops and no soldered connections. Sumter, for years, manufactured special equipment for the U.S. Signal Corps and its former engineers have incorporated in the Peatrophone the same simple, foolproof construction that made the name "Sumter" famous in the telephone industry for years.

Technically the Peatrophone may be said to comprise two phonograph disc mechanisms connected for cyclic operation with an arm for operating the hook switch of the telephone instrument. It has a microphone to pick up the sound emanating from the telephone receiver and a small loud speaker which speaks into the telephone transmitter.

A suitable amplifier is cyclically coupled first to the Speaking Disc to deliver the message thereon via the loud speaker into the transmitter of the handset and secondly switched to the Recording Disc mechanism to record the incoming speech via the handset receiver, the microphone adjacent thereto and the recorder. The device is started in operation by a "pickup" placed adjacent to the telephone bell and so coded as not to be affected by bell taps caused by static, etc.; this pick-up is not affected by any adjacent sound nor by a similar adjacent telephone bell, as it does not operate acoustically. It has no mechanical connection with the telephone ringer and cannot affect the operation thereof in any manner.

The Peatrophone can be used with 110 Volt A.C., 60 cycle current only. It uses, while awaiting calls, about ten watts, when speaking or recording, 100 watts. In case of current failure it restores the telephone set to normal and does not affect the operation thereof in any way.

There are no connections to the telephone line wires or physical connections to the telephone instrument. Servicing is similar to that necessary with telephone instruments. An occasional tube replacement may be necessary, dependent upon use.

The Peatrophone can be used with any make of common battery-manual or dial, and magnet instruments on direct lines and in some cases on party lines.

The advent of the Peatrophone is of great importance to the telephone industry.

So far as can be determined this is the first time a message recorder has

been available for subscriber use and at a reasonable monthly rental. This opens up to the telephone company an entirely new source of revenue without the necessity of increasing their investment in additional plant equipment or increasing operating costs.

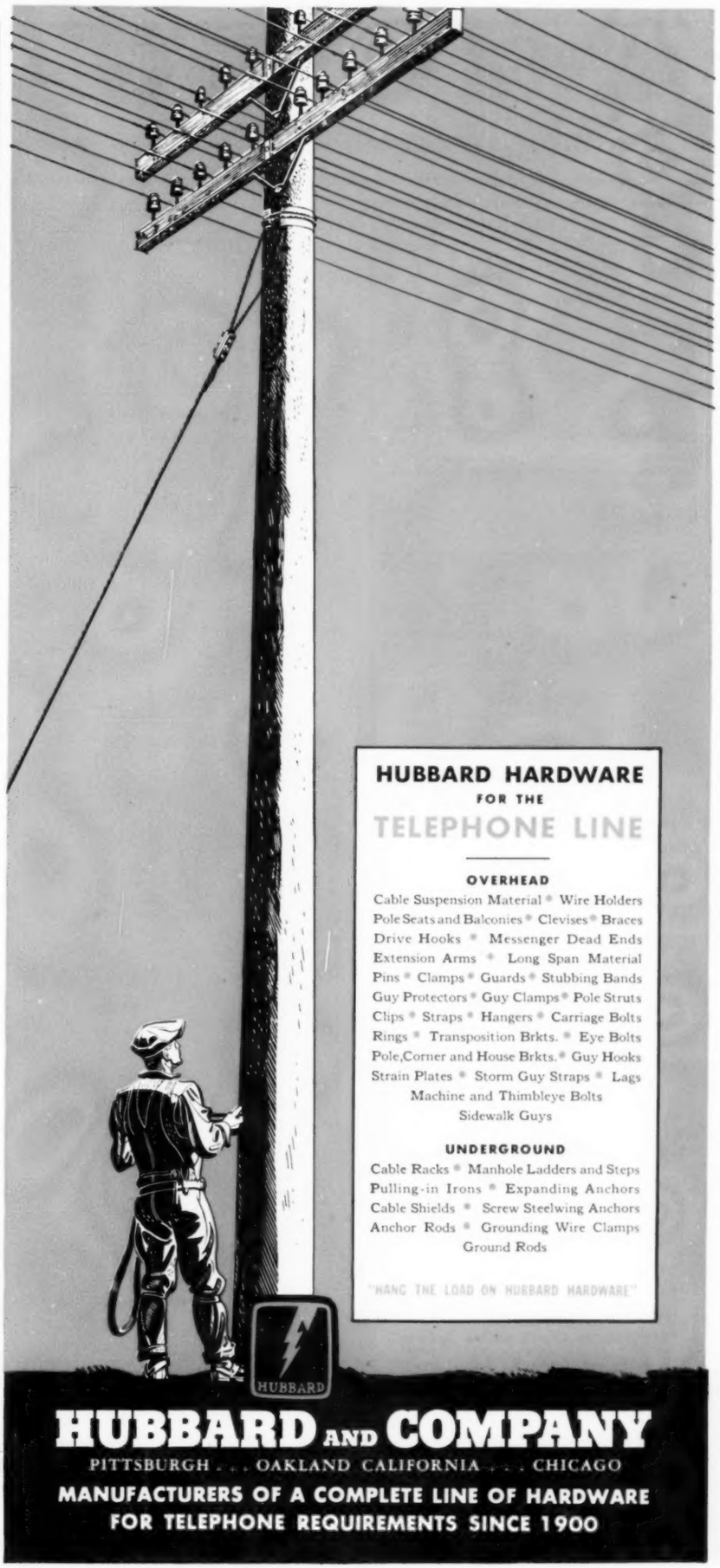
Peatrophones will be furnished operating telephone companies for lease to their subscribers under a cooperative plan and without investment on their part. The telephone company also supplies all records which is an additional source of income.

Automatic Electric Continues Signal Corp School

SEVERAL groups of men from the United States Signal Corps will receive training in automatic telephone theory and practice from Automatic Electric Company during the next nine months. The first group—30 men—began an intensive eight week course in the Company school on Monday, September 9. Other groups will receive training in a series of eight week courses beginning November 11, January 13 and March 17.

In past years the Company has conducted a school in automatic telephony during the summer and various government departments have sent selected personnel for training. The present program is a natural extension of this to meet the added requirements of national defense, and these new classes, planned for Signal Corps personnel by special arrangement with the Office of the Chief Signal Officer, will be conducted by Automatic Electric Company as part of the army's program of adding technically trained manpower to its ranks. With long experience in this kind of work, with tested programs established and trained instructors available, Automatic Electric Company is ideally equipped to formulate and administer effective training in automatic telephony, and for many years various government departments have recognized both the authoritative nature as well as the practical value of these courses.

The instruction includes both theoretic and practical work, and is of the same sort that Automatic Electric Company has supplied annually for many years as post-graduate training for technical students who select telephone work as a career and for certain selected military personnel. Part of the school time is devoted to assembly, adjustment, and inspection operations on the various types of relays, switches and other apparatus units, as well as on wiring and cable forming. The remainder is devoted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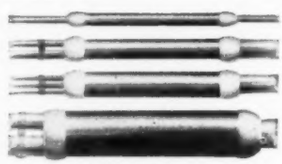
Wipe Joints



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to theoretic study of circuits and trunking. In the classroom, the principles of automatic telephone trunking and of the mechanical and electrical design of the apparatus are outlined by Automatic Electric Company's experts by means of illustrated lectures, and by recitations and demonstrations by the students.

Emmett L. Shanks is New Stromberg-Carlson Representative

The appointment of Emmett L. Shanks as sales representative for the Stromberg-Carlson Telephone Mfg. Co. has been announed by Ralph Barger, Telephone Sales Manager. He will travel through Colorado, Nebraska, and northern Kansas, the territory previously served by Arthur Preble, who will take over new duties at the Kansas City offices of Stromberg-Carlson.

New Measuring Device

Pictured is a Foot-odometer attached to the steering post of an automobile. It is made by the Speedometer Electric Company, 699 Van Ness Ave., San Francisco, Calif. The company has just added to their line of measuring devices a new push model for walking whereby distances might be accurately measured.

This company is also announcing a new Fifth Wheel direct drive which is a device, that can be transferred from car to car, that is attached to a car and in the shape of a bicycle wheel and which when the ar is in motion will give you correct distances covered comparing in accuracy to steel tape measurements. It can be lifted to running board brakets when not in use.

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Kellogg No. 118 Desk sets with New Cabinet inside connection 3-bar 1000-1600 or 2500 ohm ringer signal set @ $9.75—4-bar $10.50—5-bar @	11.25
Western Elec. No. 20AL desk set with New Cabinet inside connection 3-bar 1000-1600 or 2500 ohm ringer signal set @ $10.00—4-bar $10.75—5-bar @	11.50
Automatic Elec. No. 34A3 Monophones with No. 24 Dial and straight line Ringer and Anti Side Tone Talking Ckt. @	15.00
Automatic Elec. No. 426 Desk set with dial Trans. & Rec. Complete with enclosed gong straight line signal sets with Anti Side Tone Ckt. @	12.00
Kellogg 4-bar Generators with Crank and Mtg. Screws @	3.00
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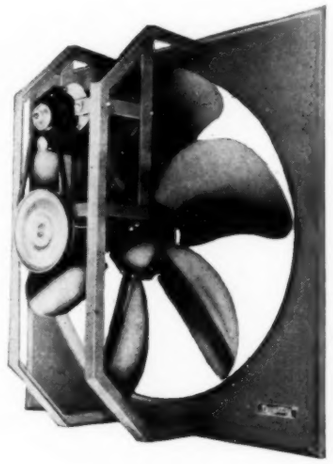
Hole in One Made by F. M. Parsons of Kellogg Switchboard

Saturday, the twenty-first of September, 1940, was a mighty important day in the life of F. M. "Red" Parsons, Eastern Manager of the Kellogg Switchboard and Supply Company. For on that day "Red" took a lusty swing and sent the little white ball sailing 180 yards straight into the cup of the fifteenth hole at the Edgewood Valley Country Club. Witnesses to this long hole in one were J. F. Hawley, Steve Zidek and Frank Wood, all of Riverside, Illinois, who were playing along with Mr. Parsons. "Red," it may be said, is quite calm about the whole thing, inasmuch as he came within one and four inches respectively of holes-in-one when playing golf on two previous occasions. He says that if a sudden wind hadn't come up he would have joined the charmed circle of hole-in-oners at an earlier date.

Belt Driven Fan

With tremendous plant expansions throughout the country, the belt driven exhaust fans, now manufactured by the Chelsea Fan and Blower Company, New York, N. Y., should be of interest to telephone people.



These fans range in size from 12" to 72" and are available with or without a penthouse. It is interesting to note that in the belt driven model the speed of the blade is reduced, making for quiet operation.

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